The Builder.

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Overcrowding the Crowded.

LONG and long ago we pointed out the evils which followed the removal of masses of houses in the metropolis, occupied by the poorer classes, without the provision of other dwellings in the neighbourhood of their means of living. We have seen with our own eyes, after such a clearing, the occupants of a single room increased from one family to three, from three families to *five*. We have seen this in Whitechapel, in Marylebone, and in Clerkenwell. When 1,500 people were ejected, on other grounds, from Orchard-place, Portman-square, about seven years ago, we followed some of them, step by step, and saw that the eviction resulted in a dangerous addition to already thickly-crowded parts of the metropolis.* "Destroy the nest, and the rooks will fly away," said the Scotch Reformer, speaking of drones of the church. And so say some now who deplore the condition of other "rookeries," and would give the occupants a larger area and better conditions; forgetting that as the rooks cannot, or at any rate *will not*, go far from the old site, they will mass together in the old nests that remain, and make all worse than before. We have asked that some enactment should be made to lead railway companies and others to provide accommodation, to some extent at any rate, for those who are displaced. A step towards this has now been taken. On the motion of Lord Derby, on Monday last, the House of Peers resolved,—

"That it be an instruction to the select committees on the metropolitan railways to inquire into and report upon the number of houses and of inhabitants likely to be removed by the works of the respective railways; and whether any provision has been made, or is required to be made, for diminishing the evils consequent on a large simultaneous displacement of the labouring population."

The mover very properly pointed out that he did not wish to interfere with the progress of railways; but he did wish, as far as possible, to reconcile that progress with the interests and the welfare of the inhabitants of the poor districts through which they passed. The committee would have no power to reject the bills, but they might insist on the introduction by the promoters of certain clauses for the purpose of diminishing the evils which would be occasioned by the prosecution of these works. He only asked the House to give to the poor a right which the rich possessed already; namely, the right of stating their case before a committee, who might then judge whether provisions might not be introduced diminishing the evil of which they complained. In proposing his motion Lord Derby gave some statements confirming the view we have taken. He pointed out that while the population of the city parishes had remained stationary, the number of houses since 1801 had not only not increased, but had actually diminished to the extent of about 3,000; and therefore that the same population which, in 1801, inhabited 17,000 houses, were, in 1851, crowded into 14,000 houses. In the parishes within the walls there had been the greatest decrease in the number of houses—2,776; but then there has been a corresponding diminution of population in these parishes to the extent of 19,000 souls. The result is that the average number of inhabitants of each house within the walls is the same in 1851 as it was in 1801, namely, 7½ to each house; but, in the city parishes without the walls, to which the poor have been driven by improvements effected in the metropolis, it appears that the houses have decreased in number about 300, while the population has increased by 19,000. Thus, while the proportion of inhabitants to each house in the inner parishes is 7½, in the outer parishes it has increased to 9 and 6-7ths in each house. The figures were given with reference to the year 1851; but, since then, great improvements have been going on in the City, the result of which has been to displace a very large number of the inhabitants.

In the Fleet valley, in the neighbourhood of Field-lane, about 1,000 houses were pulled down. These in the most miserable manner sheltered 4,000 families, comprising 12,000 persons. In single rooms in this neighbourhood we have found more than twenty persons, men, women, and children, packed together,—in others, large families sleeping on a miserable pallet; and, although a considerable time has passed, we have not yet forgotten, nor are we likely to forget, the scenes which were met with on this now open spot. Close to the crowded dwellings along the banks of the pestilent Fleet were slaughter-yards, and offensive and unhealthy trades: in the dark and dingy streets were training-places and homes for thieves of the worst description: large groups of tenements swarming with people were undrained: dust-yards and other receptacles of filth were allowed to remain untouched for years, offending the air: the water-supply was neglected: the majority of the houses were dilapidated and without means of ventilation. A sample of the former condition of this district, although even this has been improved, may be seen in Rose-court, Fryingpan-alley, and the labyrinth of courts situated near the Clerkenwell Session-house. Although, as it is stated, 12,000 persons have been removed from this site, and inconvenienced, those who were acquainted with the conditions of it must rejoice that such a blot on the metropolis has been removed. It would have been well, however, if the corporate authorities of the city of London had then applied the large grant of money which was made some time previously for the erection of dwellings for the use of the industrious classes.

The resolution arrived at must not be allowed to prevent the formation of metropolitan railways. It is clear that the immense and constantly increasing traffic of London cannot be much longer carried on with the present arrangements. A wise Providence has given to us the means of meeting the difficulty. It must be thought remarkable that in a most important division of our legislature voices should still be raised against railways, which have aided so much the progress of this and other countries.

Packhorses have given way to waggons: waggons have been driven off the road by the "royal mails:" these in due course succumbed to the locomotive: cabs have driven out the hackney-coaches; and omnibuses are now so largely used that it would be difficult to compute the inconvenience that would be caused if they should be suddenly put out of use. In the natural course of progress, nevertheless, omnibuses and cabs will be superseded by locomotives, which, before many years have passed, will come into general use in all large cities.

Railways must be carried forward, notwithstanding that many dwellings may be removed. Benefits indeed will follow the removal. All we ask for is that a thought be given to the necessities of those persons who are turned out.

According to laws made during the last few years, no dwellings within the metropolitan district can now be built without attention to drainage, paving, and other considerations: it must therefore be an advantage to the poor and industrious classes to be put into homes thus care for, in lieu of the dens, of which, in years gone by, we gave so many illustrations.

At the present time London is in a remarkable state of change. In the very heart of the City the houses and places of business are putting on a new and much grander aspect. At the West End rows of dwellings are rising in thousands yearly, making the streets of fifty or sixty years of age look dwarfed and dingy. As these houses are finished those which had been occupied by the prosperous portions of the community are left to people in poorer circumstances; and, by this process, houses which, in Queen Anne's days, were inhabited by persons of fashion, are now let in tenements to several tenants. In this there is evil, but upon the whole the advantages predominate.

We want a class of houses formed with especial reference to their inevitable occupation by more than one family; looking like ordinary residences, but with a separate entrance to each floor, and with separate conveniences. By and by, it may be hoped, old prejudices will be overcome, and numbers who now live in the courts, alleys, cellars, and garrets of the teeming hive London, may find their way, night and morning, to healthy rural villages, sub-suburbs, with the aid of the locomotive and far-seeing railway directors. Pending this, we fully agree with the instruction given by the House of Lords to the Select Committee on metropolitan railways, — "to inquire into and report upon the number of houses and of inhabitants likely to be removed by the works; and whether any provision has been made, or is required to be made, for diminishing the evils consequent on a large, simultaneous, displacement of the labouring population."

* See also "London Shadows," 1854; and "Town Swamps and Social Bridges," 1859.

NOTES ON ROMANESQUE ART IN THE SOUTH OF FRANCE.*

THE subject which most took my attention in these Romanesque churches was the corbel, since its explanation was the most difficult, and, I believe, has been but little considered by archæologists. Let us compare some of them. First, on the façade of the Beaucaire chapel, we have a goat's head, a cock's head, a leaf, an eagle, a lamb, a leaf, a lion with a human head in its mouth, a monster (mutilated), and a demon's head, roaring, nailed to the corbel.

Next, at the cloister of Montmajour, near Arles, a bear, a goat, a bull, monster and human heads, a leaf, a lion's head with a human head in its mouth, and a lion's head devouring a small naked human figure. Then, in the cloister of St. Trophime, a goat, a figure (man) in somersault, a bird much mutilated, but apparently a cock, a running figure, a donkey's head and neck, a lion with a human head in its claws, a female figure in somersault, a lion, an angel, and a long-horned goat. And at St. Gilles (façade), a small angel in foliage, a human head in foliage, a ram, an eagle with a sheep in its claws, a lion's head, a bull, a running figure, and a leaf. The corbels on the façade of St. Trophime are nearly the same as those in the cloister.

Now, I am not going to assert that these are the only subjects to be found on the corbels of the Romanesque churches; for, not to mention numerous others, at Moissac alone may be remarked a man and woman kissing, a figure holding its mouth open with its hands, a head with water apparently over one eye, one figure laughing, another scratching his head, a fox, monsters, grotesques, and foliage, which can hardly bear serious interpretation (I mean Scriptural interpretation). But it does seem most probable that these animals and figures, so constantly repeated, allude to the animals present at the birth of Christ; and that the peculiar bars sometimes seen on the corbels, as at St. Sernin at Toulouse, Notre

* By Mr. J. B. Waring. See page 155, *ante*.

Dame at Clermont, represent the manger. As the old church hymn has it,—

"Cognovit bos et asinus
Te, magnus mundi dominus."

Indeed, most of the minor incidents connected with the birth and youth of the Saviour are seen, just as at a later date the accessories of the crucifixion, the sponge, the nails, &c., were brought into use.

The domestic animals are those present at the birth; the ass bore the Holy Child into Egypt (at Arles it is represented kneeling); the falling figures, male and female, are the gods and goddesses that fell at the child's approach; the angel in foliage appeared to the wise men of the east; the running figures are the messengers from Herod; the lions with figures or heads in the mouth and the claws, are Herod, as temporal power, destroying the infants; the monster heads are enraged demons, whose doom is now come; and the nailed devil's head, which occurs at Beaucaire, at Arles, and, later still, at Dijon, where he has a ring in his mouth, typifies his fall through the birth of the Holy One.

However this may be, a most interesting collection of sculptured corbels might be made, the result of which would be, I think, to show that the earliest examples bear directly or indirectly on the birth and youth of the Saviour; that other subjects were gradually introduced, until they became as varied as at Moissac; and that, when the Pointed style took shape, and gave greater scope to the individual sculptor, new ones were introduced at will, whilst the old traditionary subjects were still retained. Thus, in the cathedral at Poitiers (dating early in the thirteenth century, and a most noble monument of the Early Pointed style), we find, in about 300 corbels of the interior, a mass of purely secular subjects, sometimes characterized by a power of caricature and broad fun which would be worthy of a modern pantomime. Having just allied the lion's head with the temporal power, I cannot refrain from saying a few words on the lion and his meaning in Romanesque sculpture. We must remember that the lion may symbolize several things, and that it is necessary to discriminate, by his position and attitude, his meaning. Taking St. Gilles only, we find him on the band running beneath the life of the Saviour, slinking and crouching with his head to the ground, and his tail between his legs; he is also in company with tigers and serpents and dragons, whilst human heads, with an intense expression of fear, turn away from him: he is here the evil one, roaming about like a lion seeking whom he may devour, but crouching in subjection and fear beneath the feet of the Saviour and his apostles. Now the lion, as we know, in a secular sense, always signifies force or power. The Byzantine emperor on his throne, with moving lions, is minutely described by historians. The mediæval judge had his seat *inter leones* and the lion's head, head and claws, or entire body, occur universally on thrones, &c. as allied with power, secular and ecclesiastical. We are then, I think, justified in taking the lion, with a human head or figure in his jaws or claws, to typify the abuse of power. At St. Gilles the four Evangelists stand on moulded brackets, which rest on lions' backs; and, although one is too much injured to make out, yet we have still remaining three of these lions of the church. Two of them are tearing to pieces human figures,—a woman and a man,—which I take to represent a heathen god and goddess: the most perfect is a man naked to the waist, and thence clad in a sort of antique trouser; there is no mistake here; the lion savagely clutches one arm with his mouth, and with his right paw, the claws well out, drags the naked flesh of the man's side in strongly marked creases. The man's head is unfortunately broken off, but beneath it, and proceeding, maybe, originally from his mouth, creeps away a dracontine creature, symbolic of the Evil One escaping from his hold. Next to this a lion holds a lamb (or ram rather, for I believe it has horns); he, however, does not in this case destroy, but protects; resting one paw, with claws retracted, on the sheep's back, and the other on his head; it is clearly an attitude of protection, and the head is placid. Here we have the lion of the Church ready to defend the Christian,—"Ye are my sheep,"—who rests evidently happy and at ease beneath his fostering care. The bases of the small columns of the left doorway rest on two lions couchant, who with reverted heads gnaw at the base: this is probably the power of the wicked which the Church keeps down, but which is for ever biting its bonds. Besides these interpretations we shall find the lion sometimes employed as a type of David (the Lion of Judah), and also not far removed from any figure of Sampson or Daniel; I say not far removed, because the old sculptors were not very particular in keeping the lions and the heroes together, as may be seen at St. Trophime and at St. Gilles, in the case of Sampson; and on the porch of St. Porchaire at Poitiers, and in the cloisters at Moissac; where, if my memory does not deceive me, the lions are shown on one side and Daniel on the other: on the St. Porchaire portal at least, Daniel is in an auriole with angels overhead on a capital to the right, and the lions on the capital to the left, with the inscription "Daniel inter Leones."

I will now revert to a still earlier period of Christian art, as exemplified in the very important and interesting series of sarcophagi preserved in the museum at Arles; dates, unfortunately, are wanting, and the names, which are Roman, though the persons were probably Gauls, afford no aid; they may, however, be generally assigned to between the third and sixth centuries. They are of the usual Roman sarcophagus shape, carved with subjects from the Old and New Testaments; those most in vogue were the Saviour and the apostles, sometimes in a continuous row, sometimes separated by columns. Once here, and once at Narbonne, we find trees instead of columns, very tastefully arranged with birds in the foliage; the trees are apparently olive, and the birds are doves: the miracles of the Saviour; these, also, are sometimes continuous, sometimes divided by colonettes; in the centre is usually a female figure with hands outstretched, intended, no doubt, for the Virgin Mary. From the Old Testament we have mostly Moses striking the rock, Pharaoh in the Red Sea, Daniel in the lion's den, and the sacrifice of Isaac. The tomb of the Labarum is carved with the twelve apostles, without division; a line of cloud passes behind their heads with stars, and over each head a lion's claw holds a wreath or crown: in the centre is a large wreath, containing the monogram of the Saviour resting on a cross with two doves: two soldiers kneel at the foot of the cross, one on each side: over the apostles are two genii or angels, supporting circular medallions containing a male and female bust; and again two genii holding an oblong tablet without an inscription: each angle terminates in a large mask, the facial line forming the angle: on one end is St. John baptizing, and on the other Moses striking the rock. This tomb is known locally as that of Constantine; it not improbably belonged to his family; and we may conclude it to be a work of the second half of the fourth century. Sculpture is here seen, founded on a good model; but somewhat rough of execution, and heavy in proportion. The faces are singularly *à l'antique;* some of the apostles are also of the Jewish cast, of the best kind; no nimbi occur in these or in any other example (except one rough and unimportant one) in the collection. The dress consists of tunic and sandal; all the eyes have holes in the pupils and generally also at the angle of the nose, to give expression. The whole character is strongly marked Roman: though the heads are large, the hands clumsy, and the style conventional, yet there is a certain simplicity and nobleness about them by no means to be despised. Some few of the heads are indeed first-rate, exhibiting such peculiarities as to lead one to conclude they are portraits; at any rate, we find here a school of sculpture at an early Christian period, the best I should say then existing, and which ranks much above the stupid faces and lanky figures, the streaky hair and stiff drapery, the minute folds and jewelled borders, of sculptured art in the same district which reached its bathos in the twelfth century. However tempting it is, I must not continue my meditation among the tombs, and will only add that at Narbonne, Toulouse, Lyons, Vienne, and Moissac, we meet with numerous sarcophagi, in which foliage and Christian emblems take the place of figures, which fell into disuse probably from want of good sculptors; and yet it is curious to see how closely the same model, conch-shell, columns, and figures, was followed at a later period, *i.e.*, the eleventh and twelfth centuries.

No one should leave Arles without paying a visit to the ruined abbey of Montmajour: not to speak of its situation, perched on a rocky island, as it were, rising from the well-watered plain, encircled with the olive and laurestinus, capped by the frowning tower of defence and refuge, the palatial ruins of the Italian style, and the gray, sombre, Romanesque abbey, with its dark, vast, mysterious crypt and sculptured cloister, there alone would well repay the walk; but besides these are the rock-cut church, of a most primitive and remarkable type; and the mortuary chapel of the Holy Cross. The latter was built in the early part of the eleventh century, square on plan, with four semicircular apses and a western porch; the roof consists of a funnel-shaped dome; there are no openings for light; and when the *concierge* slams the door violently, a whole park of artillery seems to be discharged, echoing faintly away into solemn silence. With the exception of the baptistery at Pisa, it produces the most extraordinary reverberations I ever heard. And if Mr. Roger Smith is ever in that part I recommend it to his notice: the masonry of this building is a perfect model of execution. Proceeding from this to the Primitive Church we remark the rock honey-combed in all directions with open graves, the former occupants of which, in their simple devotion, sought to be interred as near as possible to the Holy Cross: vain, however, was the hope, their resting-places are now bare, and their ashes are scattered to the wind; whilst the Holy Cross, if any true portion of it ever was there, served probably to light a fire in the Revolutionary troubles of the eighteenth century. Descending by steps in the rock, we enter the narrow passage of the original church, and a few steps bring us to an oblong space with circular roof cut in the rock; on one side is a plain window opening, on the other two are stone graves above which are cut two round-headed hollows, or niches, now empty: beyond this portion is the church, divided into two aisles by columns; on one side are three round-headed windows, on the rock side is a long low stone seat; there is a small semi-circular apse to one aisle, and in the other is an altar in the wall with an open space beneath, probably a place of interment: and passing beyond this, through a passage barely large enough to admit one person, we come to four separate apartments, quite plain, with only one small light at the end of the passage, a curious rough stone chair by the window, two stone seats, and a so-called rock-cut bed. The round roof is formed by the rock itself, except in the chapel, where it is built; it is in the chapel also that the only ornament is found, the style of which may be assigned to the tenth or eleventh century. Tradition ascribes this rock-cut church, with its graves, altars, confessional, stone seats, and sleeping apartment, to the Saints of the Early Church at Arles; and more especially to St. Cæsaire, Bishop of Arles, in the sixth century: nor do I think but what its existence may date from that epoch, although probably enlarged and ornamented at the time of the foundation of the great abbey, in the early part of the eleventh century; for this curious ornament of Christianity contains in itself, on a small scale, catacombs, chapel, hermitage, and place of refuge and defence, the whole serving as a place of safety from the Goths and Saracens, who overran Arles in the seventh and eighth centuries; and bears a marked analogy to the crypts or *cubicula* of the catacombs at Rome, which served as mortuary chapels and places of instruction for the *catæchumens*, having stone benches for pupils and penitents, and stone chairs for teachers and confessors.

The entire group of buildings here forms a most interesting study for the archæologist and architect; and I hope if any member of the Institute visit Arles, he may be enabled to dedicate a few days to their pictorial and descriptive study. Nor must we leave this district without saying a few words about the curious Mediæval village or town of Les Baux. The traveller leaves Tarascon by omnibus for St. Remy, and must wend thence about ten miles *en voiture* to Les Baux. As regards picturesqueness nothing can exceed it: a fortified town perched on the natural fortification of a rugged rock, and surrounded in all directions by upheaved granitic masses, it is the ideal of a robber knight's eyrie; its value, however, to the antiquary, has been much overrated, for, except the ruined castle and hall which appear to belong to the thirteenth century, most of the remains bearing any impress of architectural art, are of the sixteenth century. The rock-cut houses, which may belong to any period, and are of the rudest arrangement, form the most striking and curious feature of the locality; they are, however, quite plain, with the exception of a few ruined chimney-pieces of the fourteenth and fifteenth centuries. A curious columbarium, or pigeon and dove-cot, that necessary larder of live stock for the besieged, formed by numerous holes partly cut in the rock, and partly built, still remains.

The only Romanesque remains at Nimes are to be found in the cathedral façade, and at a house on the *place*. Of the former very little remains; but what there is exhibits a close following of a Roman model, with frieze and pediment, not often seen even in this last home of Roman architecture. The frieze, very roughly executed, illustrates the first books of the Old Testament, commencing with the Serpent twined round the Tree of Knowledge; on one side, Eve, whom he addresses; on

the other, Adam, who seeks to hide his nakedness: this combination, of different points in one story, is common with the early artists: the next subject is defaced: in the third, Adam and Eve are hiding themselves in trees, their busts only being seen. The Lord addresses them. We have then the Expulsion; the Offerings of Cain and Abel; the Murder of Abel; Noah and the Ark; Lot and his Sons; and so on, all these subjects being continuous, as in the early Christian tombs: this fact, and the general character of the figures and drapery, lead me to conclude them to be of a very early date. We, in England and the North of France, have, perhaps, been too apt to fix on the first half of the eleventh century, as constituting a clear line of demarcation in the history of architectural and sculptural art. It was so with us, no doubt, in a very great measure; but in the South, the course of art was more even; and in this particular example, I think we may discover one of the earliest efforts of native artists at constituting a style founded on the Roman models left them, and which finally received a peculiar character from its combination with the semicircular arch, which we remark also on this façade on a small scale, and quite devoid of moulding or other ornament. The base of this cathedral appears to have had also a large frieze, on which some remains seem to indicate the form of the griffin; but all the rest of the building is too mutilated or altered to admit of investigation. What remains of the house, which was no doubt the bishop's palace, shows some very good sculpture, which is so essentially similar in style and subjects to certain parts of the church of St. Gilles (circa 1090), that we may ascribe it to the same period. I am happy to say that Monsieur Henri Revoil, the Government architect at Nimes, is engaged in publishing a work, with carefully measured drawings and with letter-press, on these monuments of Romanesqe architecture in the south of France (the first part of which will appear this summer, published by Bance, at Paris), and which I venture to recommend to the notice of the Institute. No complicated system of construction is to be found in these buildings; the semicircular arch and dome in various combinations give, in this respect, its only claim to anything like science; and these are frequently heavy, and not well adjusted; solidity and simplicity are, however, no bad substitutes for the more complicate and often less reliable systems of after-times: the mouldings are generally Greco Roman, combined with the hollow and torus common to Romanesque art everywhere: the ornaments of the mouldings are generally Roman, the ovolo, leaf-fret, dentil, &c.; the capitals of the columns, where not historiated, are mainly founded on a Corinthian or Composite type, and the bases are usually Attic. The sculpture, as a rule, is stiff and lifeless, and the drapery, especially on the more richly clad statues, of a thoroughly Byzantine character. The masonry is of medium-sized blocks, slightly oblong, well worked, and carefully set in thin beds of mortar. No ornamental inlay is found, as in Auvergne and at Lyons; no combination of brick and stone, as at Toulouse; and we may affirm that few more interesting classes of buildings are to be found for the architect and archæologist than these Romanesque churches of the South of France. It is impossible to leave this district without putting in a word also for the grand remains of Roman architecture which ornament its soil: the noble walls of the theatre at Orange, the grand arcades of the arenas at Nimes and at Arles, the richly-sculptured triumphal arches of St. Remy and Orange, the colossal aqueduct of the Pont du Garde, the mausoleums of St. Remy and Vienne, bear witness with a force stronger than the most powerful oratory to the manly genius and profound feeling for what is noble in architecture which characterized the old Roman race: however admirable, picturesque, and striking, however full of interest to the lover of Christian art, the most ambitious works of Mediæval Europe may be, yet, owing to the littleness and confusion of their parts, they appear as the work of pigmies in comparison with the grand simplicity and indestructible strength of these labours of the giants, against which the violence of man and the corrosive envy of time have expended themselves in vain.

On the direct route and between Nimes and Toulouse there is not much Romanesque work: the interior of St. Paul, at Narbonne, exhibits, in the sculpture of the capitals, some curious applications of the palm combined with figure-subjects, among which appear some very coarse and matter-of-fact representations of the vices of man; the exterior of this church is in the Pointed style, as are all the other principal monuments of this old but somewhat uninteresting city. The museum, however, besides the early Christian tombs before alluded to, contains some good bits of Romanesque art, in the shape of capitals and fragments from buildings now destroyed; two richly-worked bronze censers; and a pastoral staff, in ivory, very plain, ending in the usual serpent-headed crook, on which stands an angel regarding an empty chair or bishop's throne. The eighteenth century is also peculiarly well-illustrated in this museum, owing to the bequest of a local collector, who confined his attention almost entirely to that period. From this point the traveller should by all means endeavour to visit Perpignan, with its Mozarabic and Spanish styles of architecture; and the adjacent church and cloister of St. Elne, so remarkable for the Egyptian character of several of its capitals, executed early in the eleventh century.

At Carcassonne, with the exception of some unimportant portions of the cathedral in the old town, everything is Mediæval. Carcassonne is Mons. Le Duc's pet patient; he is busy trying to bring the old body to life, and rehabilitate its decayed and shrunken form: but although the doctor appears to have it all his own way, and to prescribe regardless of expense, I cannot say that the result is satisfactory: there is something ludicrous, to my mind, in this expensive and useless restoration of the old fortifications; nor can one approve of the wholesale manner in which old work is pulled down and carted away to make place for new. I must add, that here and in almost every case where this distinguished architect (to whose research, taste, and industry we are all so much indebted) has added designs of his own, whether in stone or in metal, they appear to me to be of the most eccentric and emasculated character; the same rather anomalous result struck me also, during a late tour through Germany, as regards Herr Heideloff's designs.

At Agen some good bits of Romanesque architecture remain in the choir and apse of the cathedral, but more interesting than these are some old arcaded streets which still exist in the centre of the town. The breadth of the pavement is about 25 feet, that of the street about 40, and the width between arches, about 20 feet. The houses themselves are modernized or rebuilt, but the plan still holds good, and as the weather was very wet, and I had not an umbrella, my blessings fell on the departed manes of the old municipal authorities. The same remark applies to the Bastide, or Freetown of Libourne, near Bordeaux; the great square of which measures about 180 feet each way. The passages are about 21 feet broad, the width between the arches, about 14 feet; this example, though more complete, is ruined in effect by the lowness of pitch, and narrowness between the piers of the arcade. The rest of the town, though of modern construction, still retains the right-angle arrangement of street common to most of these (what may be termed), "model towns" of the fourteenth century.

But we are hastening on somewhat too fast, for we have got beyond Toulouse, a city which, besides its very remarkable Romanesque churches, possesses decidedly the most important and interesting museum of antiquities to be found in the south of France; these are deposited chiefly in the cloisters of the suppressed church of the Augustin Friars. The most numerous and varied section relates to Romanesque art, and we have here tombs, capitals, statues, and friezes, ranged round the open traceried cloister, in a manner which recals pleasurably to mind the charms of the Campo Santo at Pisa. I do not mean to uphold the design or contours of these capitals and ornamental bands as exhibiting any remarkable degree of study and refinement, but they have hardly received the attention they deserve; their character is in a high degree, rich, bold, and effective.

The museum contains numerous most interesting inscriptions; and it is to be remarked that in one of the oldest, that on the very curious slab tomb of St. Victor, at Marseilles (1048), we find the same style abbreviated, by placing small letters within large ones, as at the Abbey of Moissac, on the sculptured figure of Abbot Ansquetil (1100). This custom, with the use of Roman letters, continued down to a comparatively late period; and one of the earliest examples of the use of Gothic or German letters is to be seen on a tomb in the Museum, dated 1347. Two of the figures on the portal of an ancient church, now destroyed—that of La Daurade, I believe,—retain the sculptor's name: they are the best of the series, and the sculptor clearly was proud of his work: one has *Gilabertus me fecit*; the other, *unincertus* (?) *me celavit Gilibertus*: these statues are draped thoroughly in the rich Byzantine style, with small folds and gem-studded borders. Amongst the more fragile treasures of antiquity up-stairs, although it will not be shown without some trouble probably, the archæologist should not fail to see the so-called horn of Roland, which (if it really belonged to him) may be the one the hero died blowing, as he vainly sought with its notes to retrieve the rout of the Paladins; it appears to be the work of a European sculptor, after the Byzantine manner, and was probably a tenure horn.

The most noble monument of Romanesque art in Toulouse—and, indeed, of the south of France—is the celebrated church of St. Sernin. It is built of brick and stone, as a three-aisled Latin cross basilica, with a semicircular apse and five apsidal chapels. There is a west entrance, with two north and two south ones. The general character is large and massive, the ornament pure and good Romanesque, and the brickwork very careful, judiciously relieved by courses and dressings of a warm-coloured stone. The whole is surmounted by the peculiarly-fine brick tower, of five tiers of arcades, with which we are so familiar, through engravings and photographs. The church is stated to have been finished and consecrated A.D. 1090. The best sculpture is to be found on the doorways, and I take the subjects of the south porch (nave entrance) as an example. The cornice of the projecting wall shows the peculiar ornament and pateræ of Nimes cathedral combined with the brackets of Notre Dame du Port, at Clermont. The archway is semicircular, and in the centre is the Saviour in glory, attendant seraphim and angels, and the twelve Apostles beneath. The angle corbels of doorway are formed by David seated on a lion's back, playing the viol, on one side; on the other two men, seated cross-legged, and caressing lions. The capitals of the columns are carved with subjects from the life of the Saviour, monsters, foliage, &c. There are two columns on each side; the mouldings are the plain hollow and round; the corbels of the cornice show in succession a monkey with a lion's head in his paws, a bunch of grapes, a lion, a monster vomiting his own legs, a young woman's head with wild dishevelled hair, a matron hooded, a goat, and an animal too much broken to be made out. It would be difficult to explain the two saints carved on each side of the portal with allegorical sculpture above and beneath.

But however interesting the exterior may be, the interior is equally remarkable; and the marble slabs of the Saviour and the Apostles on the choir wall, stated to be saved from the old church, built by Charlemagne, particularly merit notice. It is with great regret that an accident prevents my giving a more detailed description of this church. I understand that Mons. Le Duc intends dedicating a monograph to it.

Toulouse is rich in buildings of the Mediæval and Renaissance periods; the brick towers of the churches of the Augustines (*musée*) and the Jacobins (*caserne*) are modelled on, and rival the tower of St. Saturnin. The cathedral contains many portions of good Pointed architecture of various dates, and some good painted glass of the fifteenth and sixteenth centuries; the triforium is peculiarly rich and effective. Adjoining St. Saturnin is a large brick house of the fourteenth century, crenellated and arcaded, with angle turrets. It formerly stood within the wall which surrounded the church precincts, and is still in fair repair, externally. The present *Lycée* retains many picturesque and remarkable Late-Pointed portions, while its Renaissance court is peculiarly striking. The "pestilent" Renaissance buildings of Toulouse (mostly mansions) are, indeed, as a rule, very broadly designed, noble-looking, and well calculated to satisfy the eye of every properly-educated architect.

There is not much Romanesque art except at Moissac, on the direct route between Toulouse and Bordeaux, at which city the monuments of Mediæval architecture, civic and ecclesiastic, are very beautiful and interesting: the artist and architect will find plenty of work there. But we have now passed almost beyond the boundaries of the south of France, and however tempting the subject, I must leave for a future day the Romanesque buildings of the centre and the north, and conclude what I am afraid will already have been to many present "a twice-told tale."

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS. — On Wednesday evening, March 13th, Mr. G. R. Burnell delivered a lecture "On the Application of the Science of the Beautiful to the Common Details of Building," at the meeting-place of the Institution, Lyon's Inn, Strand.

VENTILATION AND LIGHTING OF THEATRES AND HOSPITALS.

THE results of the attention lately given in Paris to the questions of the lighting and ventilation of theatres may be taken not merely as conclusive against the *rampe* or "float," as obstructive of the view and injurious to the health of the actors, and against the chandelier for similar reasons, but as tending to establish that the last-named contrivance for lighting the *salle* does not operate in the *ventilation* in the manner supposed. They serve, further, to justify opinions and recommendations given in the *Builder* years ago. In a recent publication* the author, Mr. Emile Trélat, Professor of Architecture at the Conservatoire des Arts et Métiers, has, we believe, given more precisely than it had appeared before the reason of the great elevation of temperature which is produced in the upper part of a theatre towards the close of the evening. This temperature we find it is stated by Mr. Louis Figuier, in the present year's volume of his "L'Année Scientifique et Industrielle," has been found at the Opéra Comique, in the upper boxes, after ten o'clock, to exceed "forty degrees," or what is 104 degrees of Fahrenheit; a condition which, he says, evidently could not exist were the agency of the chandelier sufficient to extract, and induce renewal of, the air of the "salle" to the extent needed. In the work of Mr. Trélat the insufficiency of the chandelier is attributed to a supply of air from the stage exceeding that from the front of the house, which supply, he says, traverses in a curve the middle of the space between the stage and the "ventilator," but without touching the parts occupied by the audience. It is one of the attendant evils that sound passes by the same course. "So that," in the words of the author, "if we could tint in striking colour all the particles of air put in movement in our *salles*, we should see constantly a compact and coloured mass, from embracing all the opening of the scene, advance above the pit to about two-thirds of the depth of the *salle*, and bending inwards and straightening itself to go vertically and converge in the chimney of the lustre." That mass of coloured air might be met by some threads starting from scattered points in the *salle;* but such, he says, is the action of the ventilation, one where a great quantity of air is put in movement, only without benefit to that atmosphere which actually is respired. The question, therefore, suggests itself whether the method attempted is not one of little value in the one respect, as it is admittedly injurious to the passage of sound to the audience.

In June of last year, Mr. Le Général Morin, the director of the Conservatoire, read, at the Academy of Sciences, a note, in which he endeavoured to show that by some arrangement of apparatus for lighting, gas-burners might still be the means of ventilating theatres. The arrangement he proposed seems little different from that so often referred to by us, as adopted in the box-lobbies of the former Covent Garden Theatre, where, at least in general, it operated with excellent results. Our information of the nature of the proposal, however, is not derived from the Compte-Rendu of the Academy, but from the publication of Mr. Figuier. It there further appears that a communication was received by the Academy from Mr. Walters, an Englishman, probably the architect resident at Manchester, tending to show, says our authority, that the method, when practised, had never been attended with the success expected. Either the ventilation was insufficient, or it was too active; and the air "drawn from the exterior not being warmed" people caught cold. Writing without the opportunity of checking this information as to the suggestion and the opposing evidence, we are not sure that the contrivances in question were the same: but it is stated that in one case, at Birmingham, where the burners were placed near the ceiling in connection with pipes, in order that the gas might serve the two purposes of lighting and ventilation, the currents of cold air were such that the hall was at length no longer frequented by the public; whilst in another town, in the case of a smoking-room intended to accommodate forty or fifty persons, where ventilation was effected by pipes above the burners, the effects were still so unsatisfactory that not ten smokers could remain comfortably in the apartment. Mr. Walters afterwards referred in terms of praise to the system of ventilation in certain of the hospitals of Paris. Such system, it appears, Mr. Trélat and others desire to see introduced in the French theatres.

With the press of matters upon us, we can now do little more than note the subject of ventilation of the hospitals, important as it is and interesting to readers of the *Builder* especially, as one which deserves our attention. At the chief hospital of Paris, the Hôtel Dieu, when lately visited, the air of the wards was certainly pure; but it did not appear that there were any contrivances in operation such as those which seem to be more especially referred to, as at the Hôpital Lariboisière, which has an arrangement whether in addition to or independent of that of the windows, and at the Hôpital Beaujon, which latter has been much praised. Of the system adopted a minute account has been given in the *Builder*. At the Hôtel Dieu, however, we found no surgical cases. We may just mention that if figures which we have before us are correct, there is sufficient difference in the mortality in the hospitals of Paris to show the importance of study of their features of divergence in plan and structure.*

Where the system of ventilation is adopted which the English authority admired, the air, he said, is pure as that of a field: there is not the least odour, and not the least current of air. The wards are maintained at a temperature of 15 deg. (59 deg. Fahrenheit) winter and summer, by heating or cooling the air as needed. The arrangement is one of injecting the air. The excess of vapour from the small engine which gives the motive power, is profitably applied for the vapour baths and heating the other baths; and the attention of a single man is sufficient. It would be necessary, however, to have further particulars, to discover what are the special features which make the success of a principle which, as here described, does not seem to be different from that of continuances which have been, in numerous buildings, long in use. But, to that system, as in the Lariboisière, Mr. Trélat gives his full approval, as well for adoption in the theatre as in the present use in the hospital. The mechanical contrivances and arrangement by which in the one case, air originally taken from a high level, and afterwards heated as may be necessary, is passed into the wards behind the heads of the beds, might, he thinks, be used in the theatre. The air similarly prepared, might be wafted into the *salle*, and made to traverse it in all directions, and passed out at orifices contrived under the seats of the orchestra and pit, and in the lower part of the boxes at the back. A constant and homogeneous temperature; an equal density of air and all the conditions of good and prompt distribution of sound, he believes would thus be fulfilled.

This question of the ventilation of theatres has been treated by others, and, perhaps, in a different manner, though one tending to show the possibility of great improvements. Amongst these essays are those of Mr. Tripier, in 1859 and 1860, in the "Annales d'Hygiène publique et de Médicine légale." There are, however, more publications relating to the theatres of Paris, or on the general subject, published in France, than we can now notice. Useful information on the existing arrangements in Paris, may be found in Hachette's Guide, "Paris Illustré;" in the "Album des Théâtres de Paris," and "Guide dans les Théâtres de Paris;" albeit, the plans in the first-named are neither complete, nor in all points correct; whilst the views in one or both the other works require a similar qualification. The principal work recently published in Paris, however, is that of Filippi and Contant, "Parallèle des Principaux Théâtres Modernes de l'Europe et des Machines Théâtrales," which includes plans of theatres at Paris, Versailles, London, Berlin, Munich, Naples, St. Petersburg, Bordeaux, Turin, Milan, Genoa, and Vienna, and many others. Some of the illustrations were published by Mr. Contant, ten or twenty years since. It is the fault of the publishers chiefly, that there are a large number of French architectural works which are wholly unknown in England. Their indifference to this state of things is neither just to the authors, nor to the reputation in art of their country. This subject is one, the great importance of which we have had much reason to see of late; but we must not be drawn away by it from that with which we commenced.

Along with the question of ventilation of theatres, we had just now presented to us that of the lighting. Mr. Trélat says, that the chandelier, condemned as a means of ventilation, is so objectionable in another respect, that it causes a deficiency of returns from seats in the gallery. We have already remarked that in the principal French theatres, there is scarcely anything resembling the gallery of the English theatre. A substitute for the chandelier would be a great number of small lights distributed in the house. But this disposition would have the fault of dazzling the sight, which ought in every direction to repose on points illuminated, and not on points luminous. Mr. Trélat, therefore, proceeds to recommend a system of "exclusive lighting," or of lights arranged in the roof above a transparent medium, and fed with their supply of air for combustion independently, or not from the house. We do not know whether he is aware of the cases in which this method is in use in London, not in theatres; but he does not fail to see the necessity for a great increase in the number of burners to ensure the needed quantity of light. An expense even quadrupled, however, he thinks, would be paid by the increased value of certain seats in the auditory or "salle," and the other immediate results. Mr. Figuier having quoted from Mr. Trélat, thinks fit to come to his aid in replacing gas by the electric light. Of the modes of lighting known, he says that the electric light is the most economic, as having only half the expense of gas. Thus with the location recommended by Mr. Trélat, of the illuminating agent, the lightning power might be doubled without adding much to the actual expense. Inconveniences which have opposed themselves to the adoption generally of the electric light, would in such a case as this of the lighting of a theatre, not only disappear, but would be turned into advantages. The reproach against the system in general, has regard to the great intensity which dazzles the sight. But with the seat of illumination placed out of the field of view, or even enveloped in a kind of globe of ground glass, the rays would be disseminated as from the globes recently adopted for the street lights of Paris. As to the latter we must ourselves say, the effect on the sight is not quite so agreeable as might be anticipated: whether this results from the ground glass, we are not prepared to say. Mr. Figuier believes the means are at hand for regulating, and for thus ensuring the fixity and permanent equality of the electric light. We may add that during the last few weeks, experiments in many respects satisfactory in the point of view just referred to by Mr. Figuier, have been tried with the electric light in the Place de la Concorde, where, in contrast to the brilliant illumination of the eastern side, and of the fronts of the new buildings, there is a vast area, besides that enclosed by the railing of the Tuileries, which is far too much in darkness. The same state of things occurs in the *place* in front of the Palais Royal, and the quadrangle of the Louvre to the extreme east; and in every respect, the experiment we have spoken of, is one of great importance to the effect and the safety of passengers in such a capital as Paris; and it appeared to us in everything except the dazzling effect, to be highly successful.

The subject of the lighting of theatres again received attention at the Academy of Sciences on the 7th of January last. The immediate question, which was brought forward in a *Mémoire* by Mr. Bonnafont, and which has been referred to above, had reference to injury done to the health of the actors by the present method of lighting the stage, and to the discovery of a different system. According to the "Gazette des Hôpitaux," observations of the author of the paper had shown him that the *rampe*, or "float," by its too brilliant light and the heat which accompanies this, is very hurtful to the organs of speech and respiration. Further, the communications existing between the stage and the portions below it, through the openings for the float and gas-taps, establish a current which is very disagreeable and hurtful, just in face of the singers. The mode of lighting from the level of the base of the object to be illuminated is essentially bad, and inconvenient for every one concerned. Mr. Bonnafont therefore proposes, first,—To close, especially during the representation, all openings existing between the stage or scene, and the inner parts; and second,—To replace the existing *rampe* by one suspended; and having reflectors conveniently disposed, which sending from above their luminous rays downwards, would light the actors and the objects in the scene in a manner more conformable to the rules generally observed, whether by nature or by painters, in the distribution of the light. There is nothing particularly new in these suggestions, which indeed are, as we have said, the counterpart

* "Le Théâtre et l'Architecte." 8vo. Paris, 1860.

* It may be well even in this place, to call attention to figures of the mortality as we have collected them from Galignani's "New Paris Guide for 1861." In the principal Maison de Santé, the deaths are as much as 1 in 7; whilst in the Hôpital des Enfants Malades, they are as little as 1 in 38. The Maisons de Santé are establishments for persons of a superior class. In the general hospitals, the numbers range from 1 in 10, to 1 in 22. In the case of two hospitals for a special class of diseases, the mortality in the hospital for men is 1 in 257, and in that for women 1 in 27. The mortality in the Hôpital Lariboisière, however, is not stated.

of some long since made in these pages: but it is well to see them so well set forth; and it is evident that there is a strong feeling in Paris in favour of improvements of the kind in the new Opera-house.

According to the Parisian correspondence of the *Indépendance Belge*, a question is entertained of the creation of a new theatre which could be located in a pavilion of the Louvre. It would be consecrated exclusively to the representation of works of the old repertory, or those which could be regarded as classic, so as to be in fit connection with the Museum. The Théâtre Française, already much withdrawn from its original destination, would then be so entirely, and devoted to the productions of living authors.

The fostering care of the State in what concerns the old drama, as in other departments of literature and art, and in science and education, becomes more striking to an Englishman the more the subject is attended to. Those who have followed the discussions in the French Senate of late, will have observed that no inconsiderable portion of time was taken from the question of the policy of the Government in Italy, and given to recommendations and replies concerning other subjects which could never find place in the English Parliament in the discussion on an address, or in the presence of matters political of which the interest might indeed have seemed absorbing of every other. Such observers may also have seen that the obligation of the government in these particulars, was never for an instant disputed; and that if the claimants succeeded in showing that England had in some cases given the aid of the military and naval services to the acquisition of ancient marbles, and expended a much larger amount on the national library than France on the Bibliothèque Impériale, as well as that restoration of the old cathedrals had most favourable effects in improving the handicrafts of the provinces through agency of artisans sent from the capital, thus counteracting the centralizing tendency in France,—the replication merely endeavoured to show increase in subvention and expenditure which *had* taken place, and that the government were only anxious to dispense further amounts in the manner least open to the evils of an eleemosynary system.

It is impossible to deny that this latter evil has resulted in many cases from the French system: we have evidence of it in the fact, that in some of the churches of Paris, almost side by side with works of the grandest style of art,—frescoes nothing the like of which we produce,—there are colossal but most abortive works which seem to have been commissioned in the endeavour *to find work* for men of talent unmatured, or those who had mistakenly followed the historical branch of painting. It is said too that the subvention of the theatres only leads to higher demands by actors and singers. It is clear, however, that the French system permits the pursuit of researches, and the production of literary works, which in our country too often only bring ruin on their authors in return for the benefits they afford. All that we say is, that in this matter of patronage or subvention, as in all other matters, a study by each country of what exists or obtains in the other, would disclose, if also defects, avenues to improvement. Besides the circumstances which differ, there are many which resemble in either country to the other, showing how like causes acting even on different races, conduce to like results. Such points of resemblance may be seen in the condition of a large proportion of the working classes. Some of the good points of these classes in France, we hope we have in a former article shown that we appreciate. The theatre and drama must have a far larger power of influence, through prevalence of a taste, accidental or to whatever due, on these and other classes, than in England; we trust therefore that the increased supervision of the government, lately required, and by them admitted to be called for, will be exercised in a manner so as to lead to the development of all that is noble and good in the French character and nation.

THE PROPOSED BUILDING FOR THE EXHIBITION OF 1862.

THE building which Messrs. Kelk & Lucas have undertaken to erect, from the designs of Captain Fowke, for the proposed Exhibition of 1862, is of great extent, covering the whole area of land belonging to the Royal Commissioners between Cromwell-road, Brompton, and the land leased to the Royal Horticultural Society, besides the space at the side of the Horticultural Society's garden in Prince Albert's Road, on which a more temporary building (an annex) for machinery, 870 feet long and 200 feet wide, will be built. The frontage of the Exhibition building in Cromwell-road is 1,152 feet, and here we shall have a brick structure 50 feet wide and about 70 feet in height from the ground, in two stories. The upper story, together with two additional galleries attached, will be lighted from the top, and be appropriated to pictures. Beyond this, running east and west, will be formed the great nave, 100 feet in height and 800 feet long, irrespective of the space under a vast dome at each end over an octagon of about 130 feet. The extreme height of the domes is 250 feet. Intersecting these octagon spaces, at each end, will be transepts extending north and south. The whole extent of the building in this direction, irrespective of the annex, will be nearly 700 feet. The nave will have a span roof of wood, covered with felt, and will be lighted by a clerestory about 25 feet in height. The roof will rest on semicircular girders, carried on iron columns against iron uprights, and these will also carry the galleries. Large and lofty arched entrances, and a series of semicircular headed-windows or recesses, we are not certain which, are the principal features of the front next Cromwell-road.

In comparing the Buildings of 1851 and 1862, our admirable contemporary the *Times* was led for once into an error or two, which we may as well rectify. The building of 1851 occupied on the ground 18 acres, with 5 acres of gallery: the 1862 building is to occupy 20½ acres and have 6½ acres of gallery. The greatest height of the 1851 building (the transept) was 106 feet: in the present case the whole nave will be carried to that height within 6 feet, while the domes, as we have stated, are to rise to 250 feet. The height to the gallery will be 50 feet. The amount paid for the old building was 127,248*l.*, with the further sum afterwards presented to Messrs. Fox & Henderson, of 35,000*l.* The estimated cost of the new building, is 300,000*l.*, but Messrs. Kelk & Lucas contract to supply it (use and waste), for 200,000*l.*, receiving the additional 100,000*l.*, if the gross profits exceed 500,000*l.*, or proportionally after 400,000*l.* We shall have many opportunities to go further into detail.

THE GREAT EXHIBITION OF 1862.

TEN years ago, in Hyde-park, England learnt a valuable lesson. For the first time in her history, she had a fair opportunity of arriving at accurate knowledge of her own art-producing powers, her mercantile art resources, and her art deficiencies. This she could only realize by careful and analytical comparison with similar features in the exhibited works of other nations. And it was by no means the least valuable effect of the Exhibition, that in Redgrave, Wornum, and the editors of art periodicals, there were men found who were capable of taking the opportunity of analysis, and enabling us to profit by their research. Redgrave's "Report on Design," and Wornum's "Essay on the Exhibition as a Lesson in Taste," are two valuable results of the exhibition. The illustrated catalogue is another, useful as were many other similar works, in giving us the plain unvarnished truth, about ourselves as art-producers. To all these, in a great measure, and to the effect of the Exhibition on the manufactures of England, we owe the gigantic stride in every branch of ornamental art which has since occurred. Improvement in design and manufacture has been gradual, but at the same time rapid. Those whose avocations do not lead them to notice such matters can hardly be aware of the vast difference in the ornamental and decorative art of the year 1861 and the year 1851. They will shortly have an opportunity of discovering the change and the advance made.

I attribute this change and this advance solely to the circumstance that our art critics insisted on unmasking, with a pitiless hand, our deficiencies and shortcomings; and that being convinced of these, we took immediate action to remove them. Ten years' steady progress has been made; and now, in this coming year, 1862, we are to have another Great Exhibition. To make the best use of this, whilst there is yet time, and to open a subject on which other men may have something useful to suggest, is my wish at the present time.

At the time of the first Great Exhibition there existed in the United Kingdom nineteen schools of design. In the present year there exist eighty-four schools of art. The first then, had 7,000 persons under instruction in art and design; the second, now have 84,082 persons as pupils in the schools, or under its masters. Such a comparison as this, from figures in the almanac just published by the Science and Art Department, and from the last report of the schools of design,—such a comparison will suggest to us that schools of art are now one of the great institutions of the country. As such, they must be thoroughly represented in the Exhibition of 1862. This is what I wish your numerous readers to look forward to, and invite all masters of schools of art to provide for. Each master may do much, and I for one will endeavour, in as few words as is possible, to suggest in what manner a united course of action may be taken.

1. In the name of the schools of art throughout the country, and of the masters and students of the same, the Science and Art Department should, at the proper time, apply for and obtain from the Royal Commissioners, sufficient space in the Exhibition Building for the efficient representation of schools of art, by means of exhibited works—permission for the delivery of illustrative lectures on the course of study pursued in the schools in the department allotted to them—permission for the distribution of the national medallions awarded during the year 1862, to works then exhibited—and a general allowance of free admission to all *bonâ fide* pupils of schools of art possessing a signed card from the secretary of the Science and Art Department, which card should be only issued to students who have attended schools of art during six months of the preceding or current year, on the recommendation of the head master of each school.

2. That the Science and Art Department immediately invite all the head masters of schools of art throughout Great Britain and Ireland to a conference on the best means of representing the schools as a public institution in the forthcoming Exhibition—and that, previous to this meeting, suggestions be made by circular to the various masters, issued from South Kensington; first, as to subjects likely to be discussed at the conference; second, information to be required from each master concerning the machinery of his school and the means likely to be at his disposal for the efficient representation of its studies, and the branches of art manufacture influenced by the school, of which he can produce both designs and manufactured specimens; third, to embody in writing, and to lay before the conference, any suggestions he may have to make likely to favourably influence the scheme. (Note.—As 1862 is not far distant, the sooner this conference occurs the better.)

3. As the property belonging to the Commissioners of the Exhibition of 1851 is to be regarded as public property, so far as its expenditure is concerned,—*i. e.*, it is to be understood as means for the furtherance and development of art,—it would be well and in harmony with this idea, that a memorial to the Commissioners be presented by the masters of art schools, praying that a portion of the fund be now expended in giving the means to advanced students in such schools of profiting to the utmost by the coming Exhibition; of allowing a sum of money to each school, to enable one or more of the most deserving of the students to visit and study during the period of the Exhibition, such portions of it as would most probably influence their future studies. The Science and Art Department might also, by similar assistance, enable the junior assistants of art schools to visit the Exhibition, and profit by a careful study of its contents. In this the Department would only be repeating what it did with reference to the Paris Exhibition of 1855, and from which much good resulted. There can be no doubt that, regarded as a whole, the present system of art education pursued by the Department is a decided success. An opportunity now occurs of showing this, and it is one not frequently occurring, and which ought, therefore, to be made use of.

I make these suggestions both in virtue of my position, and as feeling deeply interested in the condition of progress of ornamental art. It is necessary that we should show some results achieved for the enormous amount of public money expended on schools of art, otherwise the threatened reduction of the educational estimates may fall heavily on the Science and Art Department. Schools of Art, at least, *can* show results equivalent to the national expenditure in them, and will be anxious to do so, should the opportunity be given them in a somewhat similar manner as that I have proposed. But to show such results satisfactorily, sufficient time should be given for the preparation of works, and to ensure unity of action, on the part of the conductors of the schools.

The complete theory of art education in them should be fully displayed by the whole acting in concert. Individual schools should be able to show the highest art applied to the manufactures of the locality. Sheffield and Birmingham will

show us what may be done in metal: Manchester, London, Glasgow, Spitalfields, and Coventry, will enable us to see good art applied to cottons, fabrics of various descriptions, ribbons, &c.: Halifax will develope her taste in carpets, hangings, damasks: Dublin and Queen-square (female schools), will let us admire the exquisite designs for lace executed by pupils in those schools, and manufactured by various firms. And I believe that in almost every school, some speciality will be found to have been studied. The potteries would no doubt, as heretofore, carry off the palm for the porcelains, the encaustic tiles, the chinas, and the statuettes in Parian and Bisque, and show a vital action of art on manufactures. All would in fact be able to do something towards the illustration of the particular speciality of design, as well as the general theory of art education.

Through your columns, therefore, I appeal, and I hope successfully, both to masters of schools of art and the directors of the Science and Art Department, to begin in time, and be fully prepared to obtain all possible advantage from the Exhibition of 1862. There is no time to be lost, if anything is to be done. For some time past, large manufacturing firms have been preparing works for the Exhibition. There is little more than a year to come, before, in all probability, it will be open to the public. Now is the time, therefore, for action.

WALTER SMITH,
Head Master, Leeds School of Art.

THE FRUITLESS SEARCH FOR PERPETUAL MOTION.

ALCHEMICAL seekers after "the stone of the philosophers" had, at least, one simple, settled, idea in their heads,—a monomaniacal idea if you will, but still a definite and identical idea,—however various may have been their ways of trying to work it out. Every one of them entertained the identical idea that a certain chemical agent combined with lead or other metal constituted gold,—that the sages or philosophers whose works they studied had actually found it to be so;—and what they one and all wanted to do was to make gold,—that was, to imitate nature in her metallic processes, and produce, artificially, a thing—namely gold,—which stood before their eyes, and about the reality and existence of which thing, at all events, there could be no mistake. But the seekers after perpetual motion had no one definite thing before *their* eyes, which they desired artificially to produce. Nature presents us with perpetual motion, certainly, in various aspects; but it was no one of these various exemplars of perpetual motion, which any one of the projectors of perpetual motion wanted to produce, or imagined he had realized. In the tides we have perpetual motion, but no one wanted to produce the tides: and so with the motions of the planets: no one desired artificially to produce planets. What they wanted, if it can be said they had anything definite in the general idea, which, as a class, they held before their longing eyesight, was perpetual motion in the abstract; and as to which each projector had his own idea, or class idea.

One set, for example, wanted merely to have perpetual movement without any power applicable to machinery. What they desired to do was to obtain a movement which, from being perpetual, would enable them to discover the longitude. Others desired to keep a ball perpetually revolving, by means of magnetism. Others wished to have a water-wheel which would go perpetually by means of water which it was perpetually pumping up for the purpose; and probably even they did not care to have any surplus power thereby, to avail themselves of, for any useful purpose; although some did have the preposterous expectation, not only that they would realize 100 per cent. of the power thus obtainable, but something to spare, so as to be able, for example, to fill a reservoir above, while working their wheel with a portion only of the water pumped up from below.

The ideas of perpetual motion projectors, however, were not always so preposterous as this. There were some who actually realized the idea *they* set out with. Thus a Mr. Coxe, an automaton maker, produced a watch which he so applied to the mercury in a barometer, that the rise and fall gave motion to the watch, or rather kept it in perpetual motion; for of itself alone the watch could go a year. Even here, nevertheless, the inventor was not necessarily nearer than before to the point he ultimately had in view, of constructing a perfect chronometer, or of thereby discovering the longitude; because, in fact, it was not perpetual motion at all which was really required to do this: a common watch, wound up regularly, and never allowed to stop, is in perpetual motion. It was perfect regulation which was requisite; and although Coxe's watch is said to have had a self-regulator to let off or adjust all excess of power caused by the irregularities of the rise and fall in the barometer, there is no reason to believe that he had thus attained a perfect regulator; and even if he had, *that* at least was not "perpetual motion."

Again, another projector proposed to make a common clock to be a perpetual mover by means of the tides, so that in the rise a pipe communicated the water to a bucket, which thus descended by the increased weight; and, in so doing, wound up the clock; when it was to be tipped over, by a projecting knob, or some other means, and so allowed to re-ascend as the weights descended. Here, too, was a very feasible and practicable idea of perpetual motion; and a correspondent of our own, some time ago, we recollect, proposed some such means of keeping the Westminster Palace clock going.

There were and are entertained ideas of perpetual motion, however, of quite a different description from any realizable by means of these perpetual forces of nature, and independent of all but gravity. One very favourite notion seems to have been the perpetual revolution of a wheel, by means of weights, which were ever to bolt out on one side, to a distance from the axle, so acting as a lever power, worked by means of gravity; and ever to be gathered in again on the other side, towards the axle; so as not to interfere with the desired "mechanical power" thus obtained on the other side. Many forms of this sort of perpetual motion have been invented; but the most curious thing of all is the fact that the ingenious and certainly veracious enough Marquis of Worcester, of ancient fame, explicitly declares that one of his wonderful "Century of Inventions" was precisely such a wheel; and that it had been made, and set a going, too, in the Tower; although he is, as usual, and purposely, somewhat obscure in his description of it.

"The wheele," says the Marquis, "was 14 foote ouer, and 40 weights of 50 ^{lb} apiece: S^{r} Wm. Belford, then Lieu^{t} of y^{e} Tower, and yet liuing, can justify it with seuerall others. They all saw that noe sooner these great weights passed y^{e} Diameter Line of y^{e} vpper syde but they hung a foote further from y^{e} center, nor no sooner passed the Diameter line of the lower syde, butt they hung a foote nearer: bee pleased to judge y^{e} consequence."

Another famous wheel of this kind, which also "went," was that of Orffyreus, which was probably invented on the Marquis of Worcester's principles, and from his obscure description. It is said to have gone for two months under jealous supervision; when the inventor, in a rage with what he conceived to be ill-treatment, broke it to pieces.

In a curious and interesting work, recently published,* the author, Mr. Dircks, whose chief purpose it was to collect together all the materials requisite to form a record of what has been done—or attempted, rather—in this curious branch of *quasi* science,—and most instructive in one sense it is,—speaks respectfully, although of course dubiously, of this wheel-form of the perpetual motion. In his Introductory Essay, he says,—

"Appearances are every way so much opposed to offering any plausible hope of success, that all the wisest can say amounts to no more than—It may be found; or—It may never be found; and, if found, the discoverer will probably establish the fame of others quite as much as, if not more than, his own. The insufficiency of the only supposed means of solving the problem—namely, by contriving a wheel so that all the weights on one side shall be constantly further from the centre than the weights of the opposite side—has been attempted to be shown in a palpable manner by Desaguliers; but the author has invented a model apparatus of a more convincing character, being an actual wheel, as represented in the diagram. We have here a wheel having a number of spokes, each terminating at or beyond the periphery, with a weight. It is represented with all the weights extended farthest on the right-hand side. Now, on giving it a reverse revolution, all these weights will recede, and the weights on the left-hand side be extended in like manner. Yet will nothing be gained: in every position it will remain neutral. It consists of spokes, each terminating at their ends in compound levers, or lazy-tongs, while their opposite ends pass through a hole drilled in the axle; and so for each spoke, which must have a weight equal to the weight of the opposite end. Spokes thus made, when vertical on the top side of the wheel, are extended, while the opposite bottom spoke is depressed or shortened; and so on with each.

In conclusion, we would briefly observe that we think a careful perusal of all that has been gathered respecting perpetual motion clearly establishes that much remains to be done to prove the impossibility of practically solving this knotty problem; and that a full demonstration of the difficulties that environ it is worthy of being attempted, even by the most exalted mathematicians."

* Perpetuum Mobile; or, Search for Self-motive Power, during the Seventeenth, Eighteenth, and Nineteenth Centuries; illustrated: with Introductory Essay. By Henry Dircks, C.E. London: Spon, Bucklersbury. 1861.

Should any of our readers imagine that the search for perpetual motion must now be given up, in "this enlightened nineteenth century," they will find out their mistake when we tell them that, down to the year 1860 *inclusive*, there has been a perpetual driblet of patents taken out in this and other countries, each and every one of them professing to have discovered it. In the English records of patents alone, and most of them since the beginning of the present century, Mr. Dircks, in his indefatigable historical researches into this curious subject, has found out 74 patentees, who have obtained no less than 84 patents for perpetual motion,—not by that now hackneyed name, certainly, but in the less questionable and more scientific form of "improvements in obtaining motive power," and such like.

"It is curious," says Mr. Dircks, "to observe their several stations in life. We find a prince, a baronet, two counts, a knight of the Tower and Sword, a general, a groom of the privy chamber, the governor of Trinity Ground, a doctor of divinity, two doctors of medicine, two surgeons, a bachelor of arts, ten gentlemen, four merchants, ten engineers, three civil engineers, an architect, a surveyor, a contractor, a manufacturer, a brewer, a millwright, a miller, five machinists, a carpenter, a draftsman, a jeweller, a watchmaker, a confectioner, a shoemaker, a custom-house officer, with nine persons and seven foreigners undescribed. The major portion of these must have been persons above mediocrity in position and education, so that the pursuit of perpetual motion has been far from being limited to an unintelligent class, as boldly assumed by many insufficiently-informed writers. Their patents cannot have cost much, if any, less than 4,000*l.*—a large amount to pay for the empty privilege of possessing letters patent to so much moonshine!"

Mr. Dircks's volume is well worth looking into. Although a sad record of misspent time and talents, it contains a vast deal of entertaining matter. He has gleaned, in the course of fifteen years of desultory note-making and researches, a large mass of curious details and arguments *pro* and *con.*, which he sets forth with entire impartiality. His volume includes many papers from scientific and other journals and newspapers, definitions and descriptions from treatises on natural philosophy, encyclopædias, and dictionaries, as well as specifications of patents from the patent records, early papers from the Philosophical Transactions, and those of the Paris Academy of Sciences, &c., &c.; so that, together with the introductory essay, the volume forms a complete record of the—progress, shall we call it? of the fruitless search for a perpetual motion.

PUBLIC WORKS AND IMPROVEMENTS IN FRANCE.

BY order of the Emperor of the French an *exposé* of the situation of the Empire was last month laid before the Chambers relative to Public Works. We learn from it that for the interior the example shown by Paris has been followed by the departments and communes in the undertaking of various works which continue actively. The network of the departmental and vicinal roads has been considerably extended. At Lyons the tolls of the bridges over the Rhone have been suppressed, the Government having furnished 5,100,000f. Other towns have received subventions from the State. Lille received an allocation of 100,000f. for its constructions of workmen's lodging-houses. An equal sum has been granted to the town of Caen for public baths and wash-houses. Reims has obtained 30,000f. in aid of a refuge for the invalided working classes. Infant and training schools have received much attention. This branch of the public service assists no less than 121,916 children from one to twelve years of age, and 38,281 minors from twelve to twenty-one. The annual expense is 10,500.000f., of which sum four-fifths are borne by the departments: 119,117 children are placed to work throughout the country; the surplus 61,180 being taken care of in towns by Orphan Asylums or hospices.

In Paris the workmen's "*cités*," the Asylums of Vincennes and Vesinet, that of the Prince Imperial, &c., continue to justify the sympathy of the people, who daily contribute large sums to their maintenance.

Gratuitous medical attendance is gaining ground in the rural districts. In fifty-three departments, 300,000 indigent received attendance, &c., during the year 1860. Societies of mutual assistance have sprung up rapidly: 4,500 of these contain 500,000 participating members, and 64,000 honorary. Their capital united exceeds 24,000,000 francs. To this sum must be added the fund of 1,500 annuity or pension societies, already amounting to 5,000,000 francs. Moreover, private charitable institutions have multiplied under the encouragement and control of Government.

The question of the extinction of mendicity has been the object of practical studies. Among the

various systems tried by Government it gives the preference to the establishment of agricultural depôts. The departments of Seine-et-Oise and the Bas Rhin have just adopted this system. The penitentiary branch of the service is also endeavouring to replace industrial labour by agricultural employment, especially for younger persons in confinement.

The electro-telegraphic service has been subjected to many experiments, with a view of rendering the transmission more rapid, by the system of Morse; but no satisfactory results have been obtained in multiplying the manipulating power by mechanism set to work by the hands of the operator.

Loans to industrial firms have aided the development of manufactures and industrial establishments in France. A sum of forty millions of francs has been lent out to persons who wished to renew their machinery or ameliorate their working stock.

The reconstruction of great bridges which had attained the period of their duration, and consequently answered no longer to the demands of circulation, was one of the most important improvements for public utility. Several of these works have been finished within the last few years at Paris.

The works for the amelioration of maritime ports continue to be carried on actively. At Havre the new Transatlantic basin and pier will be soon provided: the channel is being widened out; and some talk is made of opening out the outer harbour by removing the citadel. At Marseilles, the Napoleon Basin, protected seaward by a jetty, of 100 mètres long, is expected to be finished at the end of 1862. At Boulogne, the new floating dock; at Brest, the Napoleon port established at the Porstrein reach; at St. Malo, the works of completion, the utility of which were recognized by the Emperor on the spot; at Cette, the prolongation of the maritime canal to unite the port with the terminus of the Midi railway; at La Rochelle, the new floating basin and deepening of the channel; at Bayonne, the improvements at the mouth of the Adour: all these works are being executed by Government.

The Emperor has given orders for the purchase of ten steam ploughs, in order to introduce into France the system of steam-labour, as successfully adopted in some parts of England; and, purposely to advance agricultural interests, sent out several agriculturists in the Chinese expedition to study their mode of cultivating such plants as can be acclimated to the soil of France and Europe generally, and with advantage.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT a meeting of this society, held on Wednesday evening last,—Mr. Godwin, V.P., in the chair,—Dr. Copland, F.R.S., laid before the members two portraits of Mary Queen of Scots, by Paris Bordone, the pupil and imitator of Titian, the known history of which entitles them to more consideration than some of the asserted portraits of the unfortunate enslaver. In connection with the subject Mr. Syer Cuming read an ingenious paper, showing that a signet-ring exhibited at Holyrood as having been that of Mary Queen of Scots, and which bears the arms of England and France, and initials M. S., in reality belonged to Henrietta Maria, wife of Charles I. The M. is crossed midway.

Mr. Planché, Mr. Pettigrew, Mr. Black, Mr. Vere Irving, and the Rev. Mr. Ridgway, spoke on the subject.

Mr. Gordon Hills then read a paper "On the Architectural Antiquities of Chichester," more especially the cathedral, to which we may return; and gave an account, as an eye-witness, of the recent disaster, and the endeavours made to avert it. The paper was illustrated with plans and views.

ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of this society was held in the rooms of the Royal Institute of British Architects, on the 13th inst.: Mr. George Mair presided. Letters were read from Mr. Smirke, R.A., Mr. Tite, M.P., and others, regretting enforced absence.

Mr. John Turner, Hon. Secretary, having read the report of the council,

The chairman, in moving its adoption, addressed the meeting, urging the necessity for increased funds to meet the applications made, and expressing his regret that there were still so many members of the Institute of Architects who were not subscribers to the Benevolent Society.

The report having been adopted, the following statement of the accounts was read:—

1860.					
Dec. 31, 1859.—Balance at the Bankers'				£147	8 11
Dec. 31, 1860.—Arrears of subscriptions, 1858	£1	1	0		
,, 1859	13	13	0		
Subscriptions for the year 1860	130	2	0		
				144	16 0
Donations made in the year				78	15 0
Dividend on 916*l.* 10s. 2d. to April 5, 1860	£13	7	5		
Dividend on 993*l.* 9s. 6d. to October 10, 1860	14	5	7		
				27	13 0
				£398	12 11

General Account. *Per Contra.*

1860.					
Cash Paid Expenses.					
Advertisements	£10	8	6		
Stationery and printing	9	12	9		
Petty cash, postage, &c.	8	8	6		
Writing, &c.	5	7	6		
				33	17 3
Collector's commission				10	2 7
Cash returned to collector overpaid last year to bankers				1	1 0
Cash invested in the Funds				83	9 6
Cash paid gifts to applicants				83	0 0
Balance at Bankers', Dec. 31, 1860, of society's funds	£186	1	7		
Donation to be invested	1	1	0		
				187	2 7
				£398	12 11

Mr. Mocatta moved, and Mr. Wyatt Papworth seconded, the adoption of the treasurer's report.

Mr. Godwin, without the least desire to find fault, thought the amount distributed (83*l.*) bore a very small proportion to the amount available (398*l.*), admitting the necessity for funding the donations (78*l.*).

Mr. Kerr took the same view.

The chairman, and the hon. secretary, explained the views that had guided the council.

Mr. Scott, R.A., was elected trustee in place of the late Sir Charles Barry.

Messrs. Suter, Fox, Street, Christian, and Good were elected members of the council in lieu of those who retired; and the remainder of the officers were re-elected. Mr. Norton and Mr. Papworth were elected auditors. Thanks were voted to the council, to the treasurer, auditors, and to the hon. secretary, Mr. Turner.

Donations were announced from Mr. Locker, 4*l.*; Messrs. Atkinson, York, 17s. 3d., the produce of a box kept in the office; Mr. Street, 5*l.* 5s.; and Mr. Hansard, 10s. 6d.; besides several new annual subscribers.

A vote of thanks to the chairman closed the proceedings.

Mr. C. C. Nelson, Mr. S. Wood, Mr. Boulnois, &c., besides those mentioned, also took part in the proceedings.

LIVERPOOL ARCHITECTURAL SOCIETY.

AT the twelfth meeting of the session, held on Wednesday evening, the 6th instant, Mr. James M. Hay presiding, a bust of the late Mr. Charles Verelst was received from Mrs. Verelst, and thanks were voted to Mrs. Verelst for the present.

Mr. Picton read part of a letter from an architectural friend in London, which asked why architects in Liverpool did not join the Institute in London?

Mr. Picton said he did not see that there would be much advantage in their doing so. The mere pleasure of putting F.R.I.B.A. after their names would not be a sufficient inducement; but, if some arrangement could be made by which they could be affiliated with that society, and be considered as a branch, something might be done.

Mr. Boult said the constitution of the Institute was extremely narrow. There were restrictions which debarred almost every provincial architect from becoming connected with the Institute. (?)

Colonel Brown said that Mr. Griffith, a neighbour of his, had been experimenting nearly all his life as to the best mode of making roofs of cement. He had built two houses with flat roofs, and these roofs were perfectly tight under summer's heat and winter's frost; and he (Colonel Brown) had been encouraged to make a similar experiment at Richmond-hill, and in a recent addition to his house he had had the roof covered with this cement. The cement consisted of several layers,—Welsh lime, cinders, with a coating of cement, and another cement put over that. When combined they appeared to be a solid flag, and the material was impervious to water. It was cheaper than slates, and it was a well-known fact that slates often broke, and that lead was constantly blistering.

Mr. John Hay thought that this was a very important subject. He had seen the cement used by Mr. Jones, and he thought it would be decidedly useful, at least for floors.

Mr. R. Rawlinson thought the liability to fracture would be great upon a large area, but they might get a cement roof, an asphalte roof, or a lead roof upon small areas. If they were dealing with a large area, it was possible to multiply a number of small areas into a large one, but it must not be a homogeneous flat.

Mr. Boult was afraid that using a material so impervious as the cement had been described to be would tend to cause the dry rot in the timbers.

Mr. Rawlinson then read a paper, "Notes on Architectural and on Sanitary Questions," in reference to the site, construction, internal arrangements, &c., of public buildings, dwelling-houses, &c.

The president tendered the thanks of the society to Mr. Rawlinson for his excellent paper, which was, in fact, a set of architectural canons that would be valuable for reference.

Some general conversation followed on matters of detail referred to in the paper, in the course of which a hope was expressed by one member that Mr. Rawlinson's proposition for dispensing altogether with lead piping would not be carried out by the substitution of iron pipes, as he had found from experience that iron pipes were intolerable and unmanageable.

Mr. Rawlinson replied that it was not a speculative matter that he had put before them, but the result of actual experience. He had used iron pipes for the entire supply of some nine or ten towns, and he might say for the internal supply of thousands of houses, and those iron pipes were made to pass into all sorts of corners, and he had no difficulty in using them or in repairing them. There were few waters in this country that did not act upon lead in a manner that was injurious. Iron was much more durable, and it was not liable to be injuriously acted upon as lead was.

MANCHESTER ARCHITECTURAL ASSOCIATION.

A MEETING of this Association was held on the evening of Wednesday, March 6th, at the Rooms, 55, George-street, the president being in the chair. After preliminary business Mr. John Webster read a paper on the Science of Architecture.

In the course of his essay Mr. Webster alluded to the simple but permanent construction of the Greek and other early styles, and showed that the arch principle, although rarely used by them (owing to their belief that it was thoroughly opposed to that sentiment of repose and stability which was so essential a feature of their architecture), was yet known to them; and, having referred to the further development of this principle by the Romans, he proceeded to notice its consummation during the best period of Gothic art.

The paper was followed by discussion, in which the respective merits of the two leading styles were freely referred to and supported by various members.

The following business for ensuing evenings was intimated by the Hon. Secretary, Mr. Freeman, viz.:—March 20th, Election of office-bearers, &c. April 3rd, Mr. G. Shaw Aitken, on the Limits of Truth in relation to Architecture. April 17th, Mr. Fisher on Chemistry in relation to Building.

IRISH BUILDING NEWS.

A NEW club-house is about to be erected in Belfast, for the Ulster Club. Messrs. Lanyon, Lynn, & Lanyon, are the architects.

A new Presbyterian Church is in course of erection at Sydenham, Belfast. The plan is cruciform, consisting of a nave with tower at the south-east angle, and transepts. The total length of the church is 65 feet. The school building in connection, which stands at the rear of the transepts, is about 30 feet by 21 feet, and is two stories in height. The walls are carried up in red brick, with white brick dressings. The entire of the spire will be built with white glazed brick. The passages in nave and transepts will be laid with Minton's encaustic tiling. The roof will be open-timbered, and stained and varnished. The architect is Mr. W. J. Barre; Mr. E. Armstrong, contractor.

A new front has been erected, and alterations have been made, in the printing-office for the *News Letter*, Donegal-street, Belfast, at a cost of about 2,500*l.* Mr. Barre is the architect; and Mr. James Moore the builder.

A new National Bank is about to be erected at

Ennis, county Clare, from the plans of Mr. Caldbeck, architect.

A new clock-tower is about to be erected in the Market-square at Letterkenny, county Donegal, from the designs of Mr. Goldie, architect.

THE CHEMISTRY OF THE DRYING OF AN OIL.*

Some of the Phenomena of Solidification.—The functions exercised by a drying oil on its most common applications are but little, if at all, understood by those most interested in them. The peculiar changes such an oil passes through when, forming a part of such compositions, it is used as a paint, a varnish, a printing-ink, or in any other of its numerous forms of application, are, in like manner, as little known as they are seldom studied. Yet a clear insight into the character of these functions, and into the at least general nature and order of these special and peculiar changes, is certainly as essential to those who operate with the oil, as it is indispensable in the present inquiry.

Of the 65,000 tons of linseed oil now annually produced in this kingdom, when from this there have been deducted the 33,000 exported, there remains a quantity equal to some 32,000 tons for home consumption, to be distributed throughout the many and various occasions that exist for the application of this oil. So universal and multifarious are its uses and the compositions it enters into, that, in one form or another, it is met with everywhere and at all times. It is unceasingly, and under all circumstances of every-day life, in one's presence and under one's observation. Every manufacturer, artisan, and artist, who is engaged in preparing or in distributing this oil through the various channels of its use, as well as each one of the multitude of people who, directly or indirectly, are affected by its use, is deeply interested in that one conspicuous and essential property of it, namely, its drying. Yet, amongst all these there prevails an almost complete ignorance as to what really takes place during the act of drying, and a consequent incapacity so to handle this oil as to bring into exercise this, its most important property, with efficiency and certainty. Our very familiarity with the presence and appearances of this oil under its numerous applications would seem to operate in staying all but the most superficial observations as to what changes and phenomena attend its employment, and whether they be important or not.

A drying oil has a natural tendency to pass from its fluid into a solid state. Experience—doubtlessly an empirical one in the first instance—has taught us that this tendency is to be promoted by certain artificial appliances. At the root both of this natural and of this artificially-promoted tendency there must lie some principle whose operation brings about this result, and what this principle may really be can, it is not impossible, be discovered if only searched for. Accordingly, a careful examination of attendant phenomena discovers to us the occurrence in the oil, as this transformation goes on, of a series of curious and complicated reactions, both among its own elements and between those and certain other elements exterior to it, that is, those of atmospheric air chiefly.

The result of all these reactions, when once accomplished, is a substance—namely, the oil solidified—whose properties, in several important respects, are altogether different from those of the original fluid oil.

When a water or a spirit paint dries (that is, a paint composed of a pigment ground in water, or in some volatile spirit, along with, say a little gum, added in order finally to bind together the particles of the pigment), this case of drying or of solidification issues out of the evaporating or flying off of the water or the spirit, and the leaving behind only the solid particles of the pigment and the gum. In this case there is a loss of weight in the residual paint corresponding with the weight of the dissipated water or spirit.

But when an oil or an oil-paint dries or solidifies, this is not the result of an act of evaporation, properly so called, but, on the contrary, after a series of curious interchanges among the elements of the oil (some of which, in new forms of combination, are thrown off from it) and between these and the elements of the atmosphere (through which there follows a combination with the oil), this drying is the consequence mainly of an act of absorption, resulting finally in an increase in the weight of the residual product. The phenomena, therefore, that accompany and issue in the drying of an oil are special and altogether different from those of other kinds of drying or solidification.

When linseed oil thus solidifies, the resulting product is, as already said, of a greater weight than that of the original fluid oil. This increase is so marked and considerable as (with occasionally only a trifling variation due to some special condition of the oil) to amount to from 14 to 16 parts to the 100,—that is, 100 parts of the fluid oil will, on solidification, be found to weigh from 114 to 116 parts.

Again, this solidified product possesses, as already said, some properties that are totally the contrary of those of the original fluid oil. It is now, for example, insoluble in several of the menstrua with which the oil in its fluid state is miscible to any extent. It has now assumed properties, some of which are *sui generis*, and which, though bearing a resemblance to the properties of some few other substances we are acquainted with, are really identical with none other. But it is this assumption of those special and peculiar properties, that so well adapts this oil to all its various applications. Its solidification once accomplished, we have given us a substance that appears to be proof against all further changes under the ordinary and surrounding circumstances it is placed in. The external atmosphere would seem, then, under any of its ordinary conditions, to have no further power of action over this product for, at least, a very long period of time. There has now been established in it another and more permanent state of equilibrium, than the comparatively easily affected one of the original fluid oil. It is now only the materials that may be mixed, or be brought in contact with this solid product that can possibly further change its condition, or affect its stability. If such substances,—pigments or others,—be inert, then any mixture so formed is a permanent compound,—paint or varnish. If reactionary, then there follows in it some or other of the malverse consequences that inevitably, sooner or later, must break up all integrity and durability in such a compound.

Elements of the Oil concerned in its Solidification.—Now, an empirical experience, whose existence is traceable through ages back, tells us that this assumption by linseed oil, of the solid state, can be greatly facilitated by addition to the fluid oil of certain (but in number few) substances, among which stands pre-eminently,—because of the universality and antiquity of its use—oxide of lead, or common litharge. This one of these few materials it is here convenient to select as the instance, and for demonstrations as to the nature and results of the peculiar reactions their application to the oil gives rise to. But the series of organic changes that follows such applications can be described only through the technical phraseology chemistry finds it needful in such cases to resort to; and that is as follows:—

Oil of this class is, in chemical language, called olein; and this olein is a compound of oleic acid and of glycerine, or of its synonym, the oxide of glycerule. In other but synonymous words, olein is an oleate of the oxide of glycerule, or an oleate of glycerine.

Olein, in the form of linseed oil, differs from olein in the form of other fixed oils, say, for example, of olive oil, because in each there exists a special kind of colouring matter, an essential oil giving to it its peculiar and special flavour, some two or three other impalpable adjuncts, each in quantity almost inappreciable, and held to be extraneous to the real oleaginous elements, though serving to impart to the oil its individual, special, and distinctive character.

This uniformity in the elementary composition of these oils, conjoined with the intermixture of substances held, chemically considered, to be extraneous and foreign to the fundamental element, is anolagous to what we find to be the case in the composition and special qualities of wines. The essential fundamental elements of all wines are alcohol and water; but each kind has given to it its distinctive characteristics by the presence in quantities that generally are almost infinitesimally minute of matters extraneous and foreign to the main and essential elements. These incidental adjuncts consist, in this case, of colouring and saccharine matter, tartar, incipiently developed acid products, the bouquet in form of some essential oil, and of a variety of other, but impalpable, and in weight inappreciable, substances. The characteristic differences between Port and Sherry, Hocheimer and Niërstein, between white Burgundy and Lachryma Christi, for examples, are due to extraneous constituents, special and peculiar to each, conjoined with the alcohol and water, the common base of all.

In like manner does the presence in the olein—the fundamental element of each oil—of matters equally extraneous and peculiar, give to rape and olive, to cocoa and ground nut, and to poppy and linseed oils, their several special and distinctive properties. So that, when we come to treat these products for their economic applications, it is the elementary base alone—the alcohol in the one class, and the olein in the other—that becomes the sole object of our chemical operations.

For the possession, by linseed oil, of the peculiar property of drying, which it holds in common with but some two or three other oils of the drying type, and in which it differs from all other oils, there can be found no satisfactory explanation on a study of either its extraneous adjuncts or of the ultimate or proximate elements of its olein, as those are developed on analysis. We know nothing respecting the source of this property. We recognise the fact of its existence in this and in the few others of the drying oils; and of its absence in others of the so-called fixed oils with which, because of their, in common, non-volatility, the linseed is naturally classified. And we know that it is through organic changes in the olein that it exhibits itself, and, therefore, that it is to this element of the oil, in the phenomena of its drying, and our practical appliances for controling those phenomena, that our researches should be directed.

Some relevant Properties of these Elements.—Now, the oleic acid of the olein of these oils has a greater affinity for certain other substances than it has for the glycerine with which it is in combination in them in their normal state. These preferred substances are remarkably few in number; and this number, moreover, becomes still fewer when the fitness of their other properties for application to the oil be taken into consideration. One of these is the hydrated protoxide of lead, and which is not to be confounded with the anhydrous oxide, whose application (an improper one) has already been referred to. When, therefore, this hydrated oxide of lead is, under proper arrangements, brought in contact with linseed oil, its oleic acid enters into combination with the oxide of lead, forming an oleate of lead, and on doing so, throws off or out the glycerine or oxide of glycerule.

This oleate of lead has (as necessarily has every individual and integral substance that exists) its own special properties. It is already familiar to us all in the form of that well-known item of a druggist's shop, vulgarly called "diachylon plaster," the *emplastrum plumbi* of the pharmacopœias. When to be used surgically, this product is made by boiling olive oil and water along with oxide of lead in form of litharge—the anhydrous oxide. It is, however, as readily produced from linseed as from olive oil.

When carefully prepared, this oleate of lead is of a yellowish white, or cream colour. It readily softens on application of a gentle heat, and as readily melts when the heat is increased. It is this property that enables it to be spread, by a warm iron, over the surface of linen cloth, to form the sticking-plaster of the shops. When the heat applied to the mass is above 400° Fahrenheit, its colour is changed into a deep brown, or almost black. It is soluble, to some little extent, in cold, and to a greater extent in warm linseed oil, forming a clear transparent solution. But it can be diffused to any extent through (that is, mechanically mixed with, or suspended in) linseed oil, when it forms an opaque cream-coloured emulsion. And when either this transparent solution or this emulsion is heated to from 500° to 600° Fahrenheit, it assumes a deep and permanent black colour. This emulsion, when made thick enough, could (and unfortunately does, too frequently, as will immediately be shown, find its way unwittingly into paints) be used as a paint, were it not for the malverse effects that follow such an application.

Out of a consideration of these properties of this oleate of lead—when it is mixed with and conjointly acting with linseed oil—we gather explanations of some well-known but previously unaccountable effects in paint compositions. The same study gives us deductions for our guidance in such matters that are of the greatest practical importance. These are—

1. That it is to the presence in linseed oil of this oleate of lead in form of its solution, but more generally, and in large quantities, as an emulsion, that the oil-boilers (who always use litharge,—that is, anhydrous oxide of lead,—in large quantities) are indebted for the dark colour of their boiled oil. It is the same emulsion compound, in the form of a thickened and half-baked residue, that, when his operation is finished and

* In connection with this, see also articles "On Some Malverse Reactions occurring in Oil-Paint Compositions;" pp. 3, 34, and 121, *ante*.

the oil is cold again, falls to the bottom of the vats of the oil-boiler.*

2. That frequently it is as much to this presence in paints as to the presence of resin or of non-drying oils, that their tackiness and long-continued non-drying condition are to be attributed. That paints are, in fact, under this presence (and how it comes, and how generally it prevails, will appear hereafter), but kinds of sticking-plaster compounds, that soften and adhere when touched, under the application of even a gentle heat, and under other actions speedily alter or decay.

3. That (as will immediately be more fully demonstrated) this oleate of lead finds its way, in injurious quantities, into paints, through the inordinate use of lead-compounded driers, and to this source is undoubtedly attributable no inconsiderable portion of what is now found so defective in our paints.

4. That we should, for the reasons above given, altogether abjure oxide of lead, and, consequently, the oleate of lead, whose formation it leads to, as an ingredient in our drying oils, excepting only, perhaps, when it is used in the form of the transparent cold solution of the oleate just referred to, or when the quantity present is relatively so minute as, in many kinds of rough paintwork, to be comparatively harmless. But from a drying oil, or from a paint intended to be kept exempt from all after malverse reactions, this oxide should be religiously excluded; and in favour of even a total expulsion from our repertory of paint materials, there exist other and most cogent reasons, to be more explicitly referred to hereafter.

Imitation of the Drying: How induced, Naturally and Artificially.—This special property of olein, in the form of linseed oil, to undergo, on exposure to atmospheric air, organic changes that result in its solidification, does not readily come into play when the oil is in its normal condition, or in the state simply in which we receive it on expression from the seed; that is, when in its (as it is called) *raw* state. Under this state these reactions take place, as it were, reluctantly: and it requires a long time of exposure before they begin and terminate in solidification. There would seem to be established in the oil, in its normal condition, a kind of equilibrium of affinities amongst its own constituents, and a power of resistance against external influences, which require to be disturbed or shaken before the finally stronger affinities between these and some element or elements in the atmosphere can come into play.

If, however, whilst the oil is in this suspended state, there be added to it a little of the hydrated protoxide of lead, or, preferably, of some other agent to be hereafter indicated, the affinity of which for the oleic acid is (as already stated) stronger than that of the glycerine for the acid; then this addition at once breaks up the normal state of equilibrium; and the action of the air upon the oil, and between the elements of the oil themselves, immediately begins, and spreads rapidly throughout the mass, and continues till it ends in complete solidification. The oil, in its normal state, would seem, as it were, to maintain a struggle against any inroad on its equilibrium, for a time extending to some four or five days, or a hundred hours. But immediately this addition to it has been made, a commotion among its elements begins; and in the shorter period then of only half a day, or some ten hours, its solidification is accomplished. The simple addition of the re-agent *initiates* the drying; and, once begun, it then goes on uninterruptedly to completion.

The process, in its general character, but not in its specific details, is analogous to that of common fermentation. A mass of saccharine matter in solution, in water, passes, of itself, but slowly and reluctantly into the action of vinous fermentation. But that change is *initiated* instantly on addition to the mass of the smallest particle of a fermenting agent. There is a perfect analogy in the operations in these cases; with, and necessarily so, a difference in the substantial results. Contact of the fermenting agent with an atom of the mass of the saccharine solution in the one case, and between the drying re-agent and an atom of the olein in the other, breaks up the existing combination of elements in these atoms; and then this local disruption is, under the operation of another and an equally peculiar law, propagated throughout the entire masses; ending, in the one case, in the conversion of the sugar into alcohol, and, in the other, in the solidification of the oil.

Interplay of Affinities between the Elements of the Oil and those of Atmospheric Air.—The drying once thus, or in any other way, initiated, there then follows a series of curious and complicated re-actions among the elements of the oil and between those and the external air; and it is in this series there take place those special re-actions through and out of which the drying of the oil evolves.

The nature and order of this series of changes possesses, as a study in inorganic chemistry, the deepest interest to the investigator; and it is much regretted that only their general character and results can be given on the present occasion. To follow them chemically, throughout all their stages, would require the employment of formulæ and of kinds of demonstrations that are necessarily precluded here, as well by the limited space at command, as by their disproportionate interest for the generality of readers and their inutility in immediate objects. But whilst this is so precluded, it is indispensable that we should select a few points that have certain practical and important bearings, and for this consideration the reader will, perhaps, tolerate the unavoidable interfusion of a little abstract chemistry.

Neither the house-decorator nor the artist *par excellence* would probably thank him who should insist on the value, in art-work, of a very complete acquaintance with the philosophy or the handicraft of a chemist.

Gericault,—as an exceptional instance,—might be supposed to mourn over the chemical impotency he was unblessed with, when his famous "Naufrage de la Meduse" was an occupant of his *atelier*, and had not, as now it has, within a single and brief age, mouldered on the walls of the Louvre.*

But generally the artist (he, certainly, whose creed is Ovid's, "opus superabat materiam"), may well be supposed unwilling to substitute for his own delightful work, the—to others, perhaps—equally interesting abstrusities of organic chemistry—abstrusities which but a little while ago, before the epoch that the genius of Liebig so happily inaugurated, but few in England, even of the chemists, it is said, felt any interest in or could understand.†

The differences in ultimate composition between starch and sugar, between sugar and alcohol, or sugar and oxalic acid, as those differences are determined by analysis and expressed in symbolical formulæ, do not explain to us how the one compound is transformed into the other, nor do they indicate the artificial means we should resort to in order to effect this transformation. In like manner do the differences in the ultimate compositions of the fluid and the solid oil fail to show through what mediation the one is changed into the other, and what practical means we should use either to aid or impede that transformation. For such an insight and such practical guidance we have to appeal to other kinds of research or of experience. Hence, as well as for want of space, would the details relating to these intermediate phenomena be out of place here. But with the following selected points and practical deductions from this series of reactions it is different.

1. When the modicum of oxide of lead, or other initiating agent, has abstracted its equivalent of oleic acid from the olein, there is thrown out of chemical combination, and distributed mechanically throughout the whole mass of the oil, the equivalent of glycerine that previously had been combined with the acid. There then occurs, in addition, the simultaneous or immediately succeeding formation, in the oil, of another and totally different compound, called acrolein, and making its appearance as a volatile and extremely pungent and acrid vapour, which is thrown off from the oil on its further process of drying.

Every stage of these reactions is replete with speculative as well as with practical chemical suggestions.‡ At this point, for example, one is naturally led to inquire what participation this liberated glycerine may have, or whether it have any at all, in influencing, to facilitate or retard, the ensuing process of the drying of the oil? And as to whether this acrolein also may exercise any such functions, or subserve any other material purposes; and, if so, what may be their real character. But in following out the more immediately required practical deductions we found further,—

2. That when the oxide of lead, or other re-agent used for appropriating the oleic acid, is present in the oil in inordinate quantity; then the liberated equivalent of glycerine makes its appearance on the surface of the oil or paint, covering it with what looks like condensed moisture, or a kind of dew. This is one of the varieties of "sweating" a painting is liable to; and, when so affected, is said, by the artists, to be "clammy."

3. When atmospheric air is passed in profusion into and through linseed oil, holding suspended in it certain metallic hydrated protoxides (as under one of the writer's new methods of preparing drying oils), and this aëration is purposely carried to *excess* (that is, beyond the extent needed in such operations); then vast volumes of this acrolein are given off from the oil, and distributed through the surrounding atmosphere. But the oil that thence results is, for certain purposes, the very perfection of a drying oil. Now, the same formation and emission of this acrolein (but effected and proceeding, in this case, more gradually, and, therefore, not so perceptibly), takes place on and from the walls of a freshly-painted apartment; and serves, as much as any other of the causes in action in such cases, to impregnate the air with the repulsive, headache-giving, and indescribable effluvium so well known always to pervade a newly-painted room.

It is the same acrid and unsavoury emanation—but prevailing in these instances to a greatly aggravated extent—that fills to suffocation the hot drying-rooms of the water-proofers, of the oil-cloth table-cover, the American cloth, the vegetable-leather manufacturers, and others, and that adds another mephitic element to the already sufficiently tainted atmosphere of our large letter-press printing establishments, where the acrolein is an inevitable and abundant product of the drying of the linseed oil in the printing ink. Its distribution in thin films (type-marks) over the immense area of the surfaces of the paper gives every facility for contact and consequent re-actions with the air.*

4. Why, not, therefore, before the oil is applied as paint, or to these or any of its other purposes, remove from it, by some preliminary operation, both this liberated glycerine and this subsequently generated acrolein? By so doing we should reduce, to at least this extent, the chances of malverse reactions, and should obviate the unpleasing and injurious emanations of these two curious products and accompaniments of the drying of an oil.

5. We obtain, moreover, from the study of these reactions a variety of other explanations and practical guidances. They are, like all other purely chemical actions, greatly influenced, as to the time of completion, by temperature; so that paint that, in cold weather, dries but slowly and unwillingly, solidifies rapidly on a warm day. With the thermometer at 32° Fahrenheit, twenty-hours may be needed; at 60°, fifteen hours; at 75°, ten hours; and, when the American leather-cloth maker applies 150°, he can harden each coat of his paint in six or eight hours. They are influenced by the hygrometric condition of the air, and consequently a paint keeps long "wet" in a damp, foggy atmosphere, though there may be no contingent deficiency of the warmth required for rapid drying. The suspended vapour (especially at nightfall) deposits itself, dew-like, on the face of the paint, and keeps off the free contact of the air. Under a stagnant atmosphere the operations linger; whilst, on a breezy day, they are vastly accelerated; for the air absorbs and sweeps off (as it does a pool of water on the ground after a shower) the educts at the surface issuing from the interior of the oil; and presents, at the same time, a continually recurring supply of fresh elements for absorption. Under a sunny sky, they proceed always at a comparatively quickened rate, as well because of the specific action of the sun's rays, as of the greater accompanying warmth. And here there is incurred the risk of the external and superficial reactions (those of the air upon the outer stratum of the oil) proceeding more rapidly than the interior molecular action

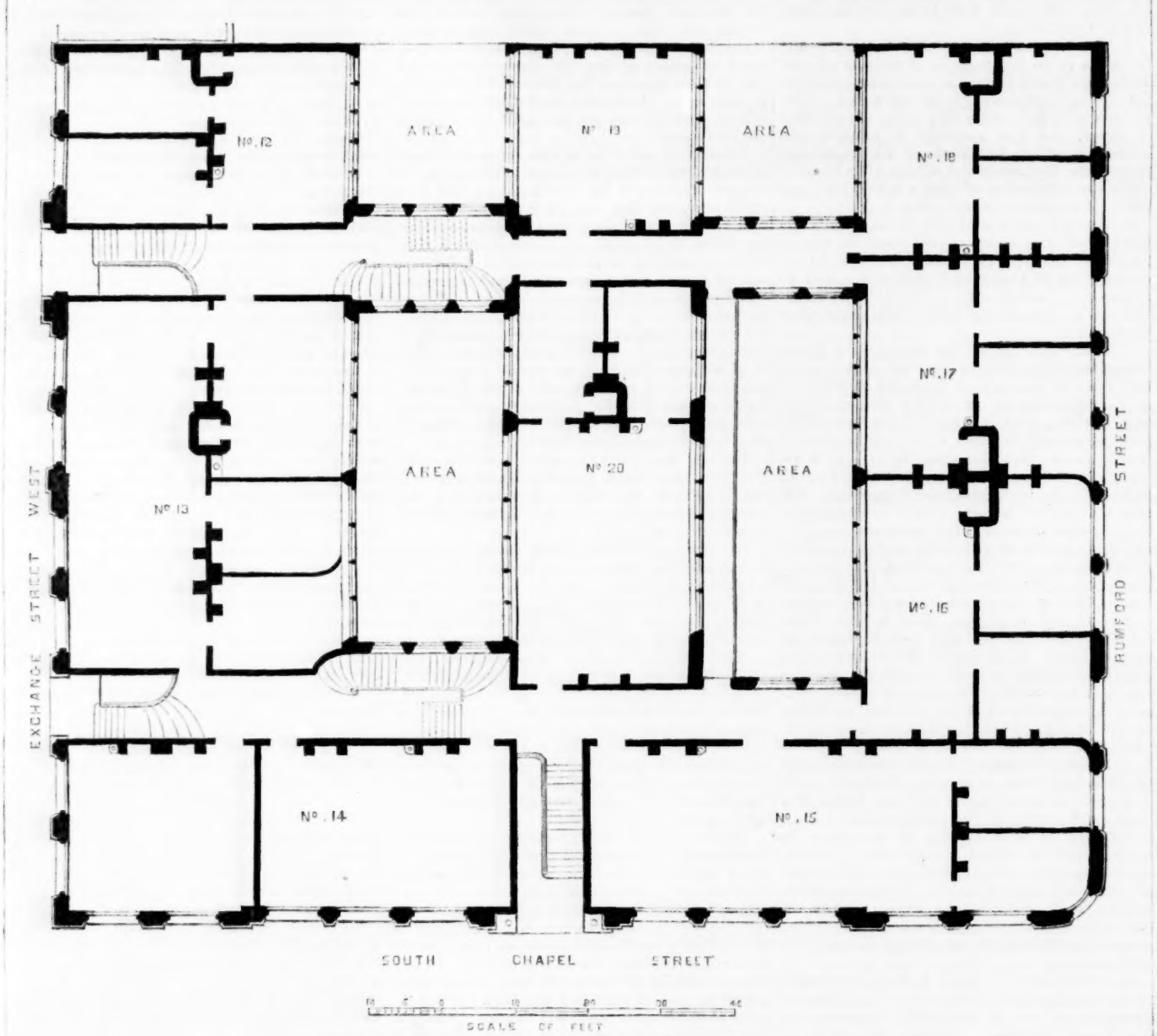
* The sedimentary deposit previously referred to, and which the oil-boiler so vastly rejoices in, and dignifies by the name of "foots."

* The paint of this celebrated picture is, unhappily, in a state of such rapid decay as just to have made it necessary, before complete destruction, that it should be copied, as the only expedient for nationally preserving a memorial interesting to the French, alike as the record of an affecting incident, and as a masterpiece of native art. How long will it be before there must go forth a similar decree respecting our frescoes in the Palace of Westminster?

† When Mrs. Sommerville published her "Mechanism of the Heavens,"—that rival as well as rescript of the "Mécanique Celeste" of La Place, it was said by some reviewer that this profound, elegant, and costly book would lie unread on the tables of our nobility, and there were not twenty men in England who could understand it. It was much the same, some fifteen years ago, with organic chemistry. Now there is, in England, no lack of accomplished chemists, as well able as their German prototypes to handle efficiently this fascinating branch of the "*seducta scientia*."

‡ For a variety of additional information and experimental details, the reader is referred to some papers by the writer in the *Journal of the Society of Arts*, vol. v. Nos. 211, 212, and 214.

* Freshly printed sheets of paper, closely piled up, and in sufficient quantity, are certainly in a fit condition to induce *spontaneous combustion*.



BROWN'S BUILDINGS, LIVERPOOL.—*Ground Plan.*

within, and thence of the "skinning" over of a paint before it is solidified internally, or throughout. It is through this there takes place the "blistering" of a paint; for the volatile or gaseous products of the reactions within the body of the oil must find a vent somewhere; and if a skin have formed over the surface, these must either force their way through that skin, or appear in blisters below it. A freshly-painted wall, with a July's sun upon it, seldom escapes this blistering, for which there will hereafter be made obvious the practical remedy. An experience emerging out of the same kind of actions teaches the coach-painter that, for his finest body and polish, he must deposit his "wet" panels in some cool place, and give his work, at every stage of it, plenty of time to harden throughout. And it equally (though seemingly paradoxically) teaches the oil-cloth table-cover manufacturer that, to give firmness and solidity to his penultimate coat of oil composition, and, at the same time, not halt in his manufacturing activity, he must place the cloth in stoves, heated to from 120 to 170 degrees Fahrenheit, which quickens and completes the internal reactions in the oil, and consequent expulsion of all volatile products, before the action of the air can prematurely "skin" over the surface.

6. Finally, so far as bears upon immediate objects, this study of these peculiar reactions teaches that we should be especially careful not to have present with the oil, in this its act of solidifying, materials—pigments or others—that, either by their own composition or reactions with the oil, add to the volume of volatile products to be thrown off; for such evolutions, occurring as the oil thickens, must serve to disarrange or break up the organic structure proper to a sound paint. It teaches us, still further, what we should do in order to secure the permanent integrity and unchangeableness of a paint or varnish *after* solidification of its oil; namely, that we should equally keep out of such compositions all substances, pigmentary or others, capable of mutual chemical reactions, and thence of creating molecular disturbances (changing in form and bulk, as water, on freezing, changes and disintegrates soils and even rocks), ending in the destruction or deterioration of the varnish or the paint.

And this leads to the demonstration that a good deal of the pernicious agency now at work has its origin in a cause that has not hitherto been dreamed of; that is, in the modern use or abuse of driers. C. B.

LIVERPOOL ARCHITECTURE: BROWN'S BUILDINGS.

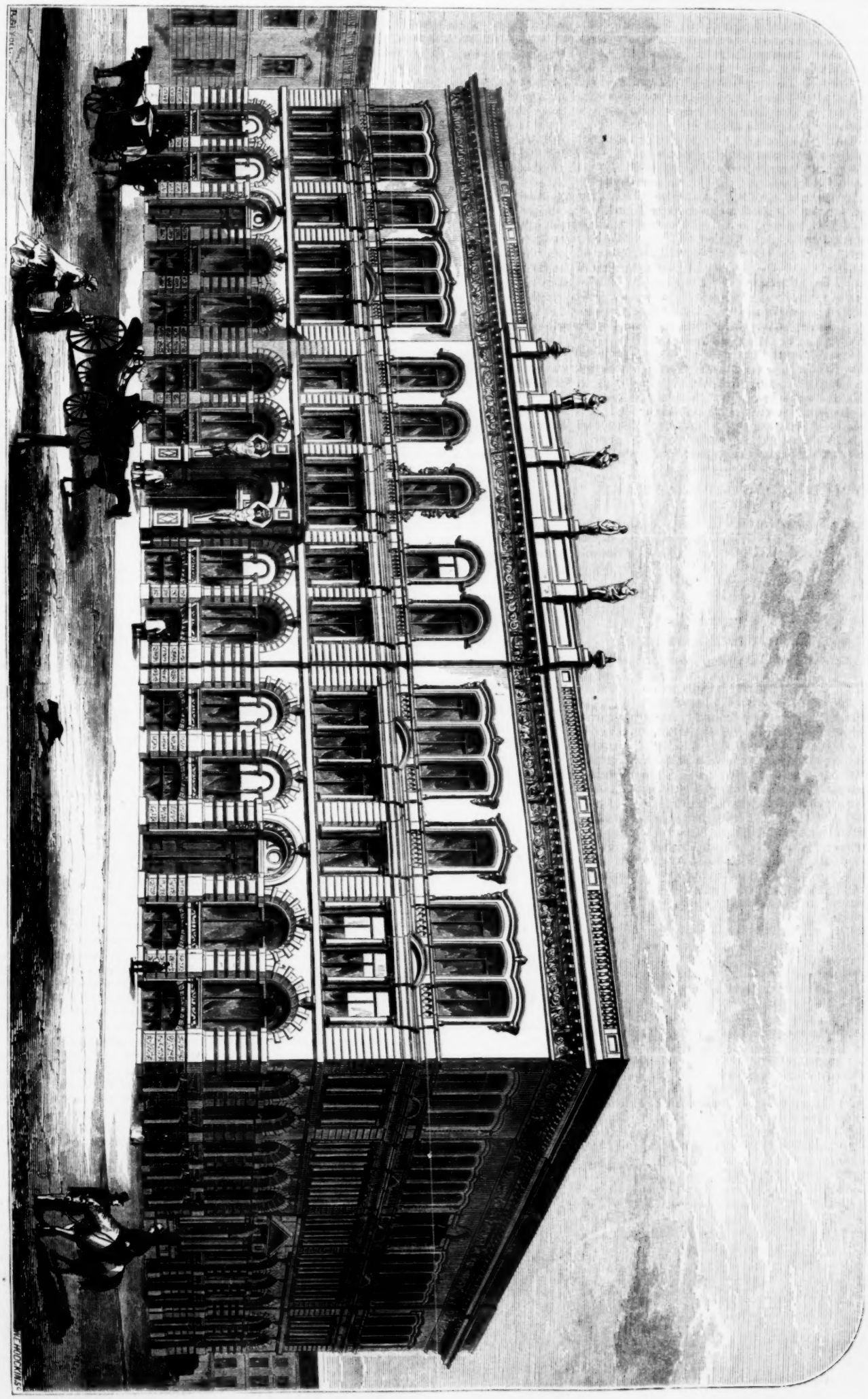
WE have before now pointed out that while Warehouses form the special architectural feature in the streets of Manchester, buildings appropriated as Commercial Chambers play that part in Liverpool. In these chambers business is transacted to an enormous extent: Liverpool, the small fishing town of the last century, is now the greatest emporium in the world.

Several of these sets of chambers have been lately erected. We illustrate, in our present number, one that has been recently commenced at the corner of Exchange-street and South Chapel-street, from the designs of Mr. J. A. Picton, for Mr. William Brown, known to our readers and all the kingdom as the munificent donor of the building for the Liverpool public Library and Museum. The history of the firm of which this gentleman is the principal member would forcibly illustrate the growth and importance of Liverpool; the amount of business annually transacted by them has to be counted in millions of pounds sterling; but our purpose just now is with "Brown's Buildings," not his firm.

The Phœnix Fire-office forms the left wing of the structure. It is a separate property, but the directors of the company came into an arrangement, and commissioned Mr. Picton to amalgamate the two buildings into one general design. Their portion of it is seen in the view, but is not shown in the plan: this refers solely to the commercial chambers.

The site of Mr. Brown's portion has cost very nearly 80,000*l.* for an area of about 1,900 square yards. The contract for the erection is about 30,000*l.* It is in the best situation in the town for the intended purpose.

The main features of the design have been dictated by the circumstances. The division of the front into three nearly equal parts was necessitated, by having to keep the two properties distinct. The cost of the land, and the internal distribution, prevented the display of any marked projections, whilst the necessity for the largest quantity of light enforced very extensive window openings and large internal areas. These were the data on which the design had to be composed. It is astylar, and depends for its effect on fenestration. The small columns in the wide openings will be detached, and the glazing extend behind. The material is white free stone from Ruabon, in Denbighshire. The basement is of grey granite from Dalbeattie, Dumfriesshire. Portions of the doorways and of the window columns will be of polished red Peterhead granite. There will be a considerable amount of sculptural decoration, for which Mr. Edwin Stirling is employed. The contractors are Messrs. Jones & Jump, of Liverpool, for Mr. Brown's portion; and Mr. George Rome, of Liverpool, for the Phœnix Fire-office.



STREET ARCHITECTURE OF LIVERPOOL: BROWN'S BUILDINGS.—MR. J. A. PICTON, ARCHITECT.

THE LATE MR. JOHN CROSS, ARTIST.

IN consequence of the lamented death of Mr. John Cross, and his position as a historical painter, a number of his friends have resolved upon raising a fund, by subscription, for the purpose of purchasing one or more of his unsold works for presentation to some public institution as a tribute to his memory as an artist, and as a means of providing some assistance for his widow and family, otherwise totally unprovided for.

An influential meeting was held at the house of Mr. Foley, R.A., a few days ago, and the sum of 80*l.* was subscribed on the spot. A committee is being formed; and, meanwhile, Mr. Edward B. Stephens, of 27, Upper Belgrave-street, Belgrave-square, will receive subscriptions.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday evening, the 1st instant, at the house in Conduit-street.

The president, Mr. T. Roger Smith, occupied the chair.

Mr. B. Backhouse and Mr. J. D. Wyatt were, on ballot, elected members of the Association.

The particulars and conditions agreed upon by the general committee with regard to the prize of 5*l.* offered by Mr. Tite, M.P., for the class of design, were submitted and approved. These are in substance,—that a prize of 3*l.* be given for the best design for a club-house, all members of the Association to be eligible to compete; and that a prize of 2*l.* be given for the best set of sketches, sent in to the class of design on or before the 12th of April inclusive.

In the absence of a member who was to have read a paper on "Brickwork,"

Mr. J. H. Christian consented, at short notice, to make some observations on "Masonry." After a few preliminary remarks on the definition of masonry, Mr. Christian proceeded to observe that the oldest specimen of masonry he had ever seen was at Malta, and appeared to be of Phœnician origin. It consisted of a series of cells, with a covered way, somewhat similar to those at the Temple of Isis at Pompeii; and he apprehended that the object was the same; namely, dens for beasts of sacrifice, as there were bones scattered about in all directions. This was the oldest specimen of constructive masonry that had ever come under his notice. Next came the masonry of Egypt, which opened up a wide field for consideration. It appeared pretty evident, that the Egyptians must have been masons for many centuries before the erection of the great buildings that still remain to attest their skill. Strange, however, it was, that no remains existed of their earlier buildings, which would have shown the stages by which they arrived at that excellence which characterizes the temples that still remain. Some of their works were to this day as perfect as when the masons left them. In Italy, on the contrary, it was possible to trace every successive stage of masonry. The first walls were, no doubt, built of loose stones, with cement composed of mud or clay to fill up the interstices. Then, as art and science grew, the manner of construction improved, until they raised the cyclopean buildings which still endure. The Greeks followed the Egyptians, but with far greater taste, delicacy, and harmony. But they were not perfect masons. They did not know much about constructive union, by getting the greatest possible strength with the minimum of material; neither were their buildings on so massive a scale. The Romans, like the Greeks, toned down the size of their buildings; but they were more scientific than the Greeks, and could span great spaces without recourse to lintels. If the student of architecture wanted to see really fine masonry, let him go to Rome and view the Colosseum, the aqueducts, the arcades, the colonnades of the Farnese, &c., which were magnificent specimens, well constructed and well bedded. The Romans had one great advantage in their buildings—they had fine stone, and it was well "weathered." The Roman buildings raised during the regal dynasties were finer than those of any other period. The stones were worked die square, stone to stone, and cramped with bronze. Bronze was the best possible material for cramping, but it was a costly substance; and the real Goths, in order to get at it, drilled holes in the walls to obtain it, and thus brought premature decay upon many a noble pile. At the theatre of Marcellus, it would be seen that the beds of the stone were sunk, and it was impossible to drag them out of these beds without pulling down the whole structure. No mortar was required, as sinking the beds had the same effect as dowelling. The Romans were believed to have quarried their stone two years before they used it; but it was also said that they did what no architect of the present day would think of doing—namely, put the bad stones in the foundations. Another feature of Early Roman masonry was that the masons began to work in curved lines, which made their work and construction more scientific. Coming down to the Norman period, he was of opinion that although the Normans had left some fine specimens, still that they were not good masons. They built their piers too loose, and in many instances their walls were filled up with rubbish and bad mortar. The Transitionists fell into a similar error, and the late fall of the spire at Chichester Cathedral was to be traced to their vicious system of building, which after a time failed to support the superincumbent weight—the core being rotten and the ashlar small and not well bonded. The Normans also false-jointed their work, and made what could not be called fair masonry. Another fault of the Norman system was, that it dispensed with foundations. He had seen cases in which cathedral work had been laid flat on the ground. Much better masonry was, he thought, to be found in the Early English period. The subsequent styles improved, down to the Perpendicular, when the architects appeared to have gone out of their way to show construction. Mr. Christian next referred to the Venetian marble masonry exhibited at Venice, and which had in that climate a very beautiful appearance. The buildings in which it was used were, for the most part, of brick veneered with marble. Though striking and beautiful in the clear warm atmosphere of Venice, he could not recommend it for England. Such work would never have stood the severe frost of last winter. Mr. Ruskin had praised it very much; but, in a constructive sense, it would not do for northern latitudes. Gothic masonry was, to his thinking, perfection. The churches in that style were planned for constructive masonry, and the builders must have possessed scientific skill to design them. After the Reformation the building of churches ceased almost entirely, and few large masonry works were carried on. With regard to the masons themselves, he was of opinion that the young masons of the present day, educated in Gothic masonry, made better workmen than those who had begun on Classic and then turned to Gothic. As an illustration of the skill of modern Gothic masons he might refer to the pulpits of late German work, which were marvels in their way; containing intersections of mouldings, or double curves, worked in and out in the most extraordinary manner. For his own part, he was puzzled to imagine how they were first set out—unless, indeed, they were carved. Referring to the masonry of our times and our own country, Mr. Christian called attention to the admirable work observable in Edinburgh and Glasgow. The former city he regarded as the finest capital in the world. The stone, than which nothing could be finer, was used with an unsparing hand: it was beautifully worked and well set; and the public buildings, and in many instances private dwellings, attested the skill of modern Scotch masons. A great deal had been said lately about the importance of selecting stone. In the observations made on the subject he entirely agreed, for nothing could be more important for the success of a building than that the stone should be well chosen, and taken out of the best beds. Whenever it was possible, he would recommend that the stone should be seasoned for two years (at all events for one summer and one winter), and that every bad stone should be unceremoniously rejected. The stone ought to be got out of the quarry early in the summer, when the frost was well out of it and the sap had disappeared. With regard to roofs of masonry, he had seen some excellent ones in France. There was also a fine specimen in the South Chapel of Scarborough Church, but not so good as those to be found in France. It might of course be said that stone roofs were too costly for general use: but still when circumstances permitted he saw no reason why they should not be used; as, when the masonry was good, they were almost indestructible. Glancing from masonry to masons, he regretted that men so intelligent and well-conducted as were the body generally, should give themselves up so completely to their trade unions. They were the proudest men connected with the building trade, and yet they allowed themselves to be slaves to their societies. It was, in fact, miserable bondage; and the men in work were fleeced to an enormous extent. It seemed to him that masons had more class faults, and were more wedded, as it were, to their society, than any other class of skilled workmen; and he regretted it; for he was persuaded that it injured them, because its effect was to discourage masonry and to take work out of their hands.

The President, having complimented Mr. Christian on the practical nature of his remarks, referred to the importance of selecting good stone. He recommended the Darley Dale stone, which he believed was the best in England. It was to be had in endless quantity, and possessed the advantages of great durability and good colour. It could also be had in blocks as large as any which the railway could convey. He regretted that it had not been employed in the new Houses of Parliament, because he believed it was in every way suited for such a building. He also recommended that as far as possible the local stone should be used, and that when practicable the natural face of the stone should be left without artificial dressing. The result, especially when it was intended to make a contrast to fine work, would be found extremely pleasing to the eye. With regard to the masons he was bound to say that he had always found them a most superior order of workmen; intelligent, well informed, possessing more scientific skill than others, and usually well conducted.

Mr. Christian said he wished to be distinctly understood as having referred to masons as a class, not as individuals; for he entirely agreed with the president as to the intelligence, skill, and good conduct of the men: all he regretted was that they had committed themselves so unreservedly into the hands of their trade unions and societies.

Some short discussion ensued, and a vote of thanks was unanimously accorded to Mr. Christian.

ARCHITECTURAL PHOTOGRAPHIC SOCIETY.

ON the 5th inst. Mr. J. P. Seddon read a paper on "The Grotesque in Art," the sequel of a recent correspondence on the subject in our pages. Mr. Street presided. On the 12th, Mr. Burges lectured on the Photographs Generally, Mr. Raphael Brandon presiding. We shall print his discourse hereafter.

ARCHÆOLOGICAL INSTITUTE.

AT the last meeting of the Institute, Mr. G. Poulett Scrope, M.P., gave an account of the discovery of an extensive Roman dwelling, with baths, hypocausts, and extensive appliances of luxury, on Lord Methuen's estates in Wiltshire. The excavations, which were under Mr. Scrope's direction, brought to light some ancient relics of unusual occurrence, which he brought for examination; especially a crescent-shaped pendant, formed of two very large tusks of a boar, mounted in metal, with rings, for suspension probably on the breast of a horse, as still in use in the East. He produced a precisely similar ornament obtained at Beyrout, in Syria, such as are usually appended to the trappings of the Arab steeds. No example, however, of this precise description had been found among Roman remains: crescent pendants are seen upon war-horses represented on Trajan's column, and Mr. Scrope cited passages in the "Eclogues" of Calpurnius Siculus, and in Statius, in which mention occurs of crescent pendants formed of boars' tusks. These curious objects were probably talismanic. Mr. Scrope announced his intention of presenting the antiquities he had disinterred to the British Museum. Professor Westwood, keeper of the Hope collection at Oxford, then read a detailed narrative of an archæological tour in the Netherlands, and Western Germany, and some parts of France, during the last summer. He described numerous manuscript treasures and works of Mediæval art which had attracted his special notice at Brussels, Liege, Aix-la-Chapelle, &c., and exhibited a large series of drawings of illuminations, sculptures in ivory, with other interesting objects of art preserved in museums in Belgium, and the rich relics of Charlemagne at Aix-la-Chapelle. Mr. Albert Way gave a sketch of the history and characteristics of the bronze antiquities of the period termed Celtic, found in Great Britain and throughout the northern countries of Europe.

INSTITUTION OF CIVIL ENGINEERS.

ON March 5th, Mr. G. P. Bidder, President, in the chair, the first paper read was "Description of a Pier erected at Southport, Lancashire," by Mr. H. Hooper.

This pier was constructed at right angles to the line of promenade facing the sea, on an extensive tract of sands reaching to low water, a distance of nearly one mile. Its length was 1,200 yards, and the breadth of the footway was 15 feet. At the sea-end there was an oblong platform, 100

feet long by 32 feet wide, at right angles to the line of footway. The superstructure was supported upon piers, each consisting of three cast-iron columns, and each column was in three lengths. The lowest length, or pile proper, was sunk into the sand to the depth of 7 feet or 9 feet. These piles were provided at their bases with circular discs, 18 inches diameter, to form a bearing surface. A gas tube was passed down the inside of each pile, and was forced 4 inches into the sand: when a connection was made with the Water Company's mains, a pressure of water of about 50 lbs. to the inch was obtained, which was found sufficient to remove the sand from under the disc. There were cutters on the under side of the discs, so that, on an alternating motion being given to the pile, the sand was loosened. After the pressure of water had been removed about five minutes, the piles settled down to so firm a bearing, that, when tested with a load of 12 tons each, no signs of settlement could be perceived. The upper lengths of the columns had cast-iron bearing plates, for receiving the ends of the longitudinal lattice girders, each 50 feet long and 3 feet deep. The centre row of girders having double the duty of the outside ones, top and bottom plates were added. The weight of wrought-iron work in each bay was 4 tons 5 cwt., and of cast-iron work 1 ton 17 cwt. The second bay from the shore was tested by a load of 35 tons, equally distributed, when the mean deflection of the three girders, in twenty-four hours, was 1½ inch, and there was a permanent set of half an inch on the load being removed.

The advantages claimed for this mode of construction were:—1. Economy in first cost, especially in sinking the piles, which did not amount to more than 4½d. per foot. 2. The small surface exposed to the action of wind and waves. 3. Similarity of parts, thus reducing the cost to a minimum. 4. The expeditious manner of obtaining a solid foundation—an important matter in tidal work. Two hundred and thirty-seven piles were thus sunk in six weeks.

The estimated cost of the pier and approaches was 10,400*l.* The works had been completed for 9,319*l.*, being at the rate of 7*l.* 15s. 4d. per lineal yard. The pier was designed by Mr. Brunlees, and the superintendence of the construction was entrusted to the author, as resident engineer, Messrs. Galloway being the contractors.

IRON-CASED SHIPS.

INSTITUTION OF NAVAL ARCHITECTS.

AT the meetings of this society which have been lately held, the Right Hon. Sir John S. Pakington, Bart., in the chair, the first communication read was from General Sir Howard Douglas. In his remarks on the subject of iron ships and iron-cased ships he had taken care, he said, not to confound the two questions together. He considered the *Warrior* and the other vessels now being built of timber combined with iron to belong to the category of iron-cased ships; for although the only timber used in the formation of the *Warrior* consisted of two layers of wood, 8 and 10 inches thick respectively, placed behind the plates; yet, but for the timber with which the plates were backed up, the side of the ship would not be shot-proof, nor could the plates be firmly fixed. He would not follow Mr. Scott Russell in the plunge he had taken to dive into the future of the British navy; but to the question put in that gentleman's pamphlet—"Iron and Wood; which shall it be?" he (Sir H. Douglas) confidently replied—of neither singly, but by a combination of both, to constitute that new description of vessels for special purposes in which the French had taken the lead, but which lead we must take out of their hands by constructing iron-cased ships which, like theirs, should be formed of timber; that was on wooden bottoms having iron-cased sides, the number and strength of these vessels to be extended according to circumstances. With respect to ships formed wholly of iron, he adhered firmly to the opinion that they were utterly unfit for any of the purposes of war. The *Great Eastern* belonged to that category, and no one could assert that a vessel that might be perforated through and through by 68-pounder solid shot was fit for such purposes. Being formed of plates proof against shells, no shells would be fired at her, but solid shot would do the work much more effectually. No real test of the resistance of the iron-cased ships to shot, nor of ships formed of thin plates of iron, would be made till trial in a state of war; and then the very existence of the country would be at stake on a theory—a speculative experiment, untried in war. It had been said in the *Times* that if the *Warrior* were successful we might bid adieu to timber ships; but the reverse would be the case. Her success would bid adieu to ships formed of thin plates of iron; because, if those ships were not made shot-proof by their thin skins being covered with massive layers of timber, and these in turn covered with 4½-inch iron plates, they would not be fit for war purposes; and, if so covered, would be unfit for commercial purposes in war, having their tonnage either wholly or greatly absorbed, according to their size, by the weight put upon them.

PRIZE PLANS OF LABOURERS' COTTAGES.

YORKSHIRE AGRICULTURAL SOCIETY.

AT a meeting of the committee, appointed to adjudicate on the plans sent in for competition for the prizes offered by this society, held at Scawen's Hotel, York, on the 1st instant, the following awards were made:—

Class 1. For the best plan of a double cottage, containing not less than three bed-rooms in each; the cost not to exceed 220*l.* the pair, 25*l.*:—First prize, "Speed the Plough," Messrs. Richardson & Ross, Darlington. Highly commended:—"Magna Spes," W. Blackmoor, Rotherham. Commended:—"Conatus sum," W. Wilds, Hertford; "Domus," W. Lightly, London; "Pro Bono Publico," W. J. Paice, Pimlico, London; "Simplicity, Utility, and Economy," W. Ward, Hulme, Manchester.

Class 2. For the best plan of a double cottage, containing two or three bed-rooms in each; the cost not to exceed 180*l.* the pair, 25*l.*:—First prize, "Dilige Pacem," J. B. Corby, Stamford, Lincoln. Highly commended:—"Magna Spes," W. Blackmoor, Rotherham. Commended:—"Experience A," John Trought, Acton, Bumell, Shrewsbury; "Industria," J. W. Poundley, Kerry, Montgomery; "Utility," E. Foggett, Blackburn; "I'll Try," J. H. Brown, Norwich.

Class 3. For the best plan of a single cottage; the cost not to exceed 120*l.*, 25*l.*:—First prize, "Cusp," Walter Boden, Birkenhead. Highly commended:—"Je vis en Espoir," A. Watson, Everton, Liverpool. Commended:—"Sepos." Messrs. Child & Son, Leeds; "Cottage Comfort," B. Lay, Oswestry, Shropshire; "Vive et vivat," T. H. Lomas, Nottingham; "Economy," J. Bradley, Ebberston, West Heslerton, York.

Class 4. The best plan of a pair of cottages, of irregular design; the cost not to exceed 210*l.*, 10*l.*; for the second best ditto, 5*l.*:—No prize awarded: insufficient merit.

The successful competitors for designs of farm-buildings will be announced at the next meeting of the committee, which will take place shortly.

The following is a summary of the competitors in each class:—

Class 1.	Double cottage	to cost	220*l.*	... 141
„ 2.	„	„	180*l.*	... 69
„ 3.	Single „	„	120*l.*	... 78
„ 4.	Irregular „	„	210*l.*	... 26
				314

The competition, as will be seen from the subjoined figures, has been most extraordinary in extent; and the labours of the committee, who sat for ten or twelve days, must have been arduous.

The public, it is to be hoped, will reap the benefit of their judgment, and witness, when the whole of the designs are exhibited at the forthcoming show of the Royal Agricultural Society of Leeds in July, a remarkable collection of plans.

STAFFORD.

IT is encouraging to find that we have not written in vain respecting Stafford. Our remarks have met with confirmation from the local press and correspondents, although this has sometimes taken the shape of prevaricating contradiction.

The *Staffordshire Advertiser* denies that the district of houses between the railway station and the town is below the level of the river; whilst a more angry repudiator of the truth of our statements declares that, to his knowledge, it is only in times of flood, when the water has risen 7 or 8 feet, that the houses are flooded, and that this has not occurred more than four times in the last sixteen years.

The quibble made to this portion of our pen-and-ink sketch is, that we omitted the parenthetical fact that the level of the river is an artificial one at the point indicated: it must, however, be patent to the most simple understanding that it is as disastrous to health to live in a district made damp by an artificial level as by a natural one. We presume that, if the floods were much more frequent than once in four years, the houses would be washed away altogether.

We are found fault with for having admired the ancient house known as Noah's Ark, which is in a very dilapidated condition, and for having omitted mention of a house of a similar character that is better cared for by its owner. Surely, when a physician prescribes a remedy for a sick person, he would not be accused of shortcoming if he should not append to his prescription intimation that another member of the same family is enjoying better health!

The *Advertiser* continues: "For the information of those not acquainted with Stafford, we may be permitted to state that, besides the public building mentioned, Stafford possesses within its limits and *immediate neighbourhood* three churches—St. Paul's, Christ Church, and Castle Church; a Roman Catholic chapel, and several Methodist and Independent chapels; two lunatic asylums, an infirmary, a gaol, a lyceum, a grammar-school, and a baronial castle."

These objects would doubtless be made much of in the local guide-books, but did not appear to call for any especial remark from us, as they scarcely concerned the aspect of Stafford from our point of view. Moreover, we would inform the writer in the *Staffordshire Advertiser*, that our remarks upon the aspect and condition of our towns are not intended for the amusement of the idle reader, but to point out to the competent authorities improvements worthy of being effected, and neglected evils calling for remedy. On this account we must express our pleasure at learning that the accommodation at the railway station, allowed by all to be dangerously insufficient, is being materially increased.

We are glad, too, to find that an effort is being made to raise funds for the repair of St. Chad's, and hope it will be warmly responded to.

THE STONE PRESERVATIVE QUESTION.

THE daily papers have given the names of a committee said to have been appointed by the Chief Commissioner of her Majesty's Works, to consider the best means of preserving the stone of the Palace of Westminster, in accordance with the resolution of the Institute of British Architects recently communicated to the Commissioner. As the Institute have not received any intimation of the appointment, and some of the gentlemen whose names are given would seem to be improper persons for this particular inquiry, we wait for more certain information.

CHURCH-BUILDING NEWS.

Kensington.—The church of St. Barnabas, which was built some thirty years ago, from the designs of Mr. Lewis Vulliamy, has lately received the addition of a chancel and vestry. The stained east window (by O'Conner), with fourteen lights, was taken out and packed up, receiving no injury. The chancel, both above and below the upper steps, has been paved with Minton's encaustic tiles. A Caen stone reredos has been provided, the tablets of which have been illuminated by Mr. Blackmore, of Euston-road. The vestry is on the north side of the chancel, and is nearly semi-octangular in form. The works cost about 1,100*l.* Messrs. McLennan & Bird were the contractors. The designs were furnished by Mr. Thomas Johnson, of Lichfield, and were carried out under the superintendence of Mr. W. S. Wintle.

Reading.—The new Church in St. Giles's parish was to have been commenced some time back, but the lowest tender so far exceeded the architect's estimate, that it was found necessary to refer the plans back for amendment, so that the cost may be brought down to such a sum as would probably be raised by the projectors of this district church. The cost will be about 6,500*l.*, of which 5,000*l.* have been secured.

Norton Malreward.—The chief corner stone of the parish church of Norton has been laid. Mr. James Wilson is the architect, and Messrs. Wilkins are the contractors.

Shrewsbury.—St. Giles's Church has been reopened. The edifice has recently been enlarged by an erection on the north side of the nave, displacing a small dilapidated aisle of the old church. The addition, according to the local *Chronicle*, is only part of a more extended plan intended to be carried out as the wants of the district may require, in which the present structure forms the nave to the proposed future extension—the choir and chancel, the old nave, a south aisle, the present chancel, and a side chapel or aisle to the new chancel. On the north side it is hoped to build a tower. The new building is erected in red and white Grinshill freestone,

the colour contrasted and blended. The style is Geometric. The western gable has a five-light traceried window. The north wall has a deeply-recessed masonry doorway and three two-light traceried windows. At the eastern end a masonry arch is built to suit the proposed extension, and filled in with rubble and an old two-light window. The old arcade has been simply rebuilt, and the other parts cleaned and repaired. The sittings gained are 120. The work has been done by Mr. Treasure, of Newport, from designs and under the superintendence of Mr. S. Pountney Smith, of this town, the total cost, exclusive of the porch, being 800*l.*

Chorlton-upon-Medlock.—The foundation stone of the new church of St. Paul, Chorlton, has been laid. The site selected for the building is at the junction of Higher Temple-street and Brunswick-street, in a locality already populous, and where the remaining land is being rapidly built over. In the proposed church, which is to be built according to designs furnished by Messrs. Clegg & Knowles, architects, sittings will be provided for 1,100 persons, of which about two-fifths will be free. Nearly four-fifths of the amount necessary for the building and endowment have been already subscribed.

Sheffield.—Mr. James Brown, of Occupation-road, has been repairing the spire and lightning conductor of the parish church. Mr. Brown reached the height by tying a number of ladders to the steeple, one above another, and his ascent of them attracted some attention. He is the son of Mr. Samuel Brown, who some time ago repaired the lightning conductor of a chimney at Stoke Priory, Worcestershire, 312 feet in height, reaching that altitude by fixing twenty-four ladders one above another. The repairs at the parish church are being made under the direction of Messrs. Flockton & Sons, architects.

PROVINCIAL NEWS.

Croydon.—The tender of Messrs. Marsland & Son for improvements to the Assize Courts has been accepted. Some alterations and reductions in the items having been effected, the reduced estimate for these improvements amounts in all to 2,013*l.* 7s. 3d.——There is talk in the Local Board of Health of building new Assize Courts, marke accommodation, &c.

Brighton.—The Local Works Committee reported to the Town Council at last meeting that for the erection of a groyne near the Old Steine Groyne, and the repair of the Albion Groyne, agreeably to drawings and specification prepared by the surveyor, the following tenders were received, viz.—G. Cheesman & Co., 1,860*l.*; W. Dethick, 2,579*l.*; John Fabian, 1,919*l.* The resolution of the Committee, that the tender of Messrs. Cheesman & Co. be accepted, subject to the approval of their sureties, was confirmed by the Council. Attention was called in the Council to the wide difference between the amount of the tenders.

Portsmouth.—The new hall, Landport, which has been erected under the superintendence of Messrs. Houghton, of Portsea, architects, is approaching completion, and will be opened for the use of the Board in the course of a month.

Worcester.—At their last monthly meeting the Asylum Committee inspected plans submitted by Mr. Rowe, the architect, for a new block of buildings to accommodate 100 additional female patients, and his estimate of the cost of the proposed building was 2,500*l.* Plans were also submitted for a new recreation-hall, at the estimated cost of 1,800*l.* The necessity for erecting these additional buildings appearing urgent, the Committee determined unanimously to recommend their erection to the magistrates at county sessions and the Town Council of the city.

SCHOOL-BUILDING NEWS.

Epping.—Large schools have been erected here by Mr. G. E. Pritchett, at a cost of about 3,000*l.* Dwelling-houses of a later style (at the request of the committee) than that of the schools have also been erected.

Redhill.—A new school-room for boys, in place of the one now used for that purpose at St. John's National Schools, has just been opened. The new school-room, together with a schoolmaster's house, have been built at the cost of Mrs. Price, of Woodhatch. The architect was Mr. Hesketh, and the buildings have been erected by Mr. Carruthers, of Reigate. The master's house is not yet ready for occupation. The new school and residence are built within the main frontage, southwards; so that now there is a considerable range of building along both the south and east front, grouping with the rising ground behind. The new school is 45 feet long by 18 feet wide, with high opened timber roof, and a large window at each end. The walls are faced internally with white bricks and red and black in patterns: at the south-east angle is a porch with a turret over it containing a clock with two dials and bell. The residence is connected by an arcade with the school. The school-room is heated by two open fireplaces, with warm-air chambers at the back and under iron hearths, through which chambers a supply of fresh air passes into the room, and ventilation is provided for by separate air flues, which are divided from the smoke flues by iron plates, and thus have their action secured through the heat derived from the smoke flues. The hat and cloak lobbies are also warmed by gratings from the same fireplace. The style of the building is a modification of Early English. They are built of Fuller's earth stone, from the neighbourhood, with Bath stone dressings, and are covered with plain tiles with ornamental crestings.

Stourbridge.—It has been finally resolved to purchase the premises adjoining the grammar school property; to erect the new grammar school on the site thus obtained; to improve the interior of the masters' houses; and to alter the frontage of the same, so as to make it correspond in architectural character with the school building itself. The Charity Commissioners have approved of this plan and the proposed alterations, and it only remains to obtain the necessary funds for carrying out the project. The cost of the new site and re-erection of school, together with improvements in the masters' houses, and incidental expenses, is estimated at 3,000*l.*: of this sum, 2,600*l.* have been subscribed. The architect is Mr. T. Smith; and the builder, Mr. Nelson, of Dudley.

Manchester.—Christ Church Schools, Moss Side, have been opened. The building is in the Decorated style, and is divided into three bays, with gables. In the south gable is a ventilating turret, and there are also flues and air chambers. The building is two stories high, and for both day and Sunday-schools. On the ground-floor are rooms for boys and infants, for classes, storage, and other purposes. Above is an apartment intended for the girls' school. It has an open-timbered roof, and is calculated for public meetings and similar purposes. At the end of the room is a stained-glass window, by Messrs. Edmundson & Son, of this city. This feature in schools opens a useful system of illustrating Scripture truths to the young. The windows are inscribed with numerous texts. The architects were Messrs. Goldsmith & Son. The cost of the building has been 2,114*l.*, and the furnishing and gas-fittings have cost 140*l.* more.

THE CITY OF MEMPHIS.

THE interesting account of Professor Donaldson's "Observations in Egypt," in the *Builder* for February 23, induces me to request permission to mention a fact which, to my surprise, seems to be still nearly unknown; viz., that the colossal statue at Mitrahenny is not now the sole representative relic of the ancient city of Memphis. M. Mariette, in the year 1850 or 1851, discovered the real city itself lying under the sand; although, on account of the vandalism of the Arabs, he was obliged to cover up all he found, after making his drawings and measurements. Mr. Bayard Taylor, in his delightful book, "Life and Landscapes in Egypt" (S. Low & Co.), gives a brief account of this discovery. He visited the excavations in November, 1851, and heard many interesting details from M. Mariette's own lips. Perhaps the following fragment of his narrative may send some of your readers to his books:—

"Granite pavements, fresh as when first laid, basement-walls of white marble, steps, doorways, pedestals, and fragments of pillars glittered in the sun, which, after the lapse of 2,000 years, beheld them again. I slid down the side of the pit, and walked in the streets of Memphis. The pavement of bitumen, which once covered the granite, apparently to protect it and deaden the noise of horses and chariots, was entire in many places. Here a marble sphinx sat at the base of a temple, and stared abstractedly before her: there a sculptured cornice, with heavy mouldings, leaned against the walls of the chamber into which it had fallen; and over all were scattered fragments of glazed and painted tiles and sculptured alabaster. The principal street was narrow, and was apparently occupied by private dwellings; but at its extremity were the basement walls of a spacious edifice. All the pits opened on pavements and walls, so fresh and cleanly cut, that they seemed rather the foundations of a new city, laid yesterday, than the remains of one of the oldest capitals of the world."

SIGMA.

P.S.—At the end of Miss Martineau's "Eastern Life," in the Appendix, there is an elaborate argument (whether by herself or not, I forget) to prove that "Pompey's Pillar" is really the sole relic left standing of the celebrated Alexandrian Library. Does this bear in any way on the curious remark made by Professor Donaldson as to the condition of the foundation?

MARKET RASEN SCHOOL COMPETITION.

SIR,—Will you call attention to the recent competition for school, &c., at Market Rasen?

The trustees, I hear, received upwards of fifty designs, which were hung in the Lincoln Assembly Rooms on Thursday, the 21st of February. On Friday, at 12 a.m., the trustees met; and the following morning, all the designs, save four, were packed and sent back to their respective authors, without a word of thanks or the slightest appearance of having been examined at all.

Of the four designs retained, the two which rank first and second, respectively, are No. 1, Mr. Fowler, of Louth, singularly enough in the immediate district of the clerical gentlemen who are principally the trustees; and No. 2, Mr. Pope, of London, who, likewise, singularly enough, "ought to have had the job" some time ago, and "was sure to get it," a country architect told me months ago.

I say nothing of this selection; but I do say that to "examine" or "carefully consider" fifty sets of designs, at something less than five minutes per set, is *too ridiculous*. The whole affair reflects infinite discredit upon gentlemen who ought to know better. The *plans* were, in a building of the kind, of more importance than the external character of the design, and should have been examined with great care; whereas, they *must* have been *utterly ignored*.

ONE OF THE FIFTY.

MEDALS AND PREMIUMS.—ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE statement just now published sets forth that the Royal Medal for the year 1862 will be "conferred on such distinguished architect or man of science, of any country, as may have designed or executed any building of high merit, or produced a work tending to promote or facilitate the knowledge of architecture, or the various branches of science connected therewith."

The Silver Medal of the Institute will be awarded to the author of the best essay on either of the following subjects:—

1st. The proper application of wrought and cast iron, constructively and artistically.

2nd. The application of timber work in England, constructively and artistically, from the year 1400 to the present time.

3rd. The introduction of Italian architecture into England.

4th The principles of the application of iron work in the construction of floors and roofs, illustrated by examples.

[These medals are open to all members of the profession, without limitation as to age.]

The Soane Medallion will be awarded for the best design, well illustrated by a sufficient number of drawings, for—

A museum of sculpture and pictures, ancient and modern, with lecture-room to hold 560 persons, and library to hold 5,000 volumes.

The successful competitor, if he go abroad within three years after receiving the medallion, will be entitled to the sum of 50*l.* at the end of one year's absence, on sending satisfactory evidence of his progress and his studies.

[The competition for the Soane Medallion is open to all members of the profession under the age of thirty years.]

A prize of ten guineas, offered by the president, will be awarded to the author of the most approved set of architectural drawings, consisting of plan, elevation, and section, executed in the best manner, in colour, and shaded, and occupying not less than a sheet of imperial paper. The scale to be one-fifth of an inch to the foot. The subject to be a building of an admired example, or of original design, such as a chapel, a pleasure-house for a garden, a park-gate entrance-lodge, a moderate-sized villa, or a small market-house and room above.

The whole to be a fair set of drawings in the best manner.

[The above prize to be open to all students, whether of the Institute or not.]

That a prize of books be given by the Institute to the author of the design that may be considered the second in merit.

A prize of ten guineas, offered by Mr. Tite, M.P., F.R.S., Fellow, will be awarded to the author of the best set of sketches or suggestions in the Italian style of architecture, for public buildings adapted to modern wants, *e.g.*, churches, town-halls, railway stations, public offices, &c., in England.

[The competition is open to all associates and students of the Institute. Each competitor is to send in not less than two, and not more than three, sets of sketches.]

A prize of ten guineas, offered by G. Alexander, Fellow, will be given for the best essay on the four ancient camps near Swindon, Wiltshire, viz., Blunsdon, Uffington, Liddington, and Barbury, showing how, without injury to the ancient remains, works of a temporary character might be added, to render them available for defence by Rifle Volunteers and others; taking advantage of the resources of modern science, the railway, telegraphs, &c., and of the large engineering works at Swindon.

[This competition is open to all members of the profession.]

The subject of the design for the students' prize in books for the year 1861 is—"A Dispensary suited for a Manufacturing Town."

The conditions and instructions may be obtained at the Institute.

BAD DWELLINGS: HOW TO IMPROVE THEM, AND MAKE USE OF THE EXHIBITION FOR 1862.

SIR,—I omitted to explain in what manner penny subscriptions should be applied to improve our dwellings; thinking my remarks would then be too lengthy for your valuable space. My plan is for the subscribers to form a committee, offer small premiums for designs, and then get more subscribers, and hire a room where they may experiment and meet for mutual improvement; and finally, if successful, place in the Exhibition for 1862 a model dwelling by and for the working classes in particular, where every trade may show its well-directed effort to complete a home worthy our advanced intelligence. The present time is most favourable for an effort by all trades united for some object worthy of themselves and the age in which they live. The great social good arising from such a work cannot be disputed.

Now, sir, I think the first nail for the job is forged, and I call upon the Trowel, the Mallet, the Plane, and the Brush, and say, come forward, to fix and finish it. If so inclined, address a letter to Forge Hammer, at the office of the *Builder*, and then we may soon get to work, and strive to profit by the good advice of our true friend the *Builder*, who constantly keeps our best interest at heart.

FORGE HAMMER.

CO-OPERATION FOR THE WORKING CLASSES.

SIR,—Seeing you give prominence to any object having for its tendency the intellectual improvement of humanity, I am emboldened to make a few remarks.

Men are apt to talk of tyranny among employers, and give vent to language both harsh and contradictory, without attempting to fix the first stone of their accusation.

Co-operation is adaptable to the exigencies of the times, and gives facility to cultivate the mind, and raise man up from the grovelling state of physical dependence to a higher position.

You may enter some plausible trades' union, and fret your time away in attempting to adjust some imaginary grievance, and find your efforts fruitless. Now, here is an organization that is pre-eminently calculated to meet your wants, and will do more towards ameliorating your social position than any trades' unions ever did.

Political science, social science, and moral philosophy, now occupy the minds of a considerable portion of working men, and I say good speed; for we know well ignorance leads to poverty, and poverty to crime.

Curtailing the hours of labour may seem very plausible, but does it not intrench on individual action? Be that as it may, I am not advocating long hours, but I do say, co-operation, if properly carried out, will eventually place man in the most advantageous position, and brighten his social existence.

THE SECRETARY TO NEWMARKET CO-OPERATIVE SOCIETY.

ARCHITECTS' ACTIONS.

FEES FOR CERTIFICATES FOR BUILDING LEASES.

In the action Brown *v.* Stone, tried in the Southwark County Court on the 28th ult., the plaintiff was an architect and surveyor of Robert-street, Adelphi, and the defendant was a builder in the Westminster-road. The defendant, in July last, entered into a contract to build a villa at Anerley, Surrey, and which he should have covered in by the 17th of September; but, failing to do this, notice was served upon him to rescind the contract, and that the works would be carried on and completed by some other builder, and that he would be answerable for any loss thereby sustained. In this dilemma defendant applied to plaintiff to effect if possible some arrangement on his behalf, and offered to take the ground and premises on which he had commenced building the house on building lease for a term of 99 years at a ground-rent, and to complete the house, at his own expense, according to the specification and drawings prepared by the plaintiff, and requested plaintiff to endeavour to procure for him a lease accordingly. Plaintiff acceded to this request, and, after some negotiation, obtained from the freeholder a consent to grant defendant a lease upon the house being covered in. Defendant agreed to accept the lease, and to pay plaintiff his fees and charges in reference thereto. These were two sums of five guineas each,—one for the drawings and specification of the house (and which defendant was to follow in completing the works), and the other sum was to be paid for the certificate of the lease when defendant should be entitled thereto. An agreement embodying these among other conditions was drawn up, and a copy sent to defendant, who shortly afterwards informed plaintiff that an agreement for a lease would not be so beneficial to him as an immediate lease, and requested plaintiff to endeavour to procure a lease to be then granted to him, although the house was not then covered in. After some further negotiation plaintiff obtained the consent of the freeholder to this altered arrangement, and intimated same to defendant, and applied to him for payment of his fees. Shortly afterwards, on the 14th of November, defendant paid one sum of five guineas, being for the drawings and specification, and received from plaintiff a receipt accordingly, and requested to be allowed to pay the second sum at a future period; and plaintiff agreed to let this sum stand over until the lease was ready for execution. On the 29th of November, plaintiff having received intimation from the solicitor to the freeholder that an appointment would be shortly made for defendant to receive the lease, wrote to defendant for payment of the fees due for the certificate; and defendant, in reply, called upon plaintiff and requested as a matter of convenience to be allowed to pay them when he received the lease; and plaintiff instructed the solicitor to the freeholder to receive the fees accordingly. The lease having been executed and delivered to the defendant on the 5th of December, plaintiff on the following day wrote to the solicitor for his fees, and was informed that defendant had stated that he had paid them to plaintiff, whose receipt for 5*l.* 5*s.* he had produced on the occasion.

The defendant upon his oath stated that he had never heard of any such fees being due until he was asked for them by the plaintiff, after the lease had been executed and delivered to him. But upon the plaintiff producing to the court his letter-book, in which were duly entered copies of letters addressed to the defendant, demanding payment of these fees prior to the execution of the lease (the originals of which letters, however, the plaintiff swore that he had never received, although duly served with notice to produce them), and it being found, upon reference to the agreement for the lease which had been furnished to the defendant, that he was to pay the fees in question,—

His Honour said that it was useless on the part of the defendant to attempt to induce the court to believe that he had not received these letters, and that he was not aware from the first of his liability to pay the sum in dispute;—and, indeed, that if the agreement and letters put in had not established the plaintiff's case, which they most certainly had, the proved usage of requiring a builder to pay the costs and charges of a surveyor, for such services as the plaintiff had rendered the defendant, was sufficient to entitle the former to a verdict. An order would be made upon the defendant for the immediate payment of the sum claimed; and in addition thereto, he must pay the plaintiff's full costs.

DECISIONS UNDER THE METROPLITAN BUILDING ACT.

SHOP FRONTS.

AN old shop-front, projecting about 2 feet 6 inches, had been entirely removed at No. 114, New Bond-street. The district surveyor (Mr. E. C. Hakewill) required that the new one should be built in accordance with the 26th section of the Act.

This not being acceded to on the part of the owner; the builder, Mr. Wicks, was summoned to the Marlborough-street Police-court, and the case heard before Mr. Tyrwhitt. Mr. Frederick Taylor appeared for the builder.

Mr. Hakewill stated the case, and contended that, though the right of projection might have been maintained if a portion of the old shop-front had been retained; yet, as it had been entirely removed, and was, in his opinion, an "alteration" amenable to the rules of the Act, it must be set back to 10 inches from the front wall.

Mr. Taylor relied on the 8th and 10th sections, and contended that, as the building to which it belonged was not a new building, the rules of the 26th section did not apply.

Mr. Hakewill relied on the 9th section, admitting that it was not a "new building," but an "alteration."

The magistrate was of opinion, that as the projection of the new shop-front was not greater than that of the former, the work was not such an alteration as was contemplated by the 9th section, but might be considered as a "necessary repair."

Counsel's opinion has since been taken on this case, and is to the effect, that, though the magistrate's decision is erroneous, it does not contain matter of law upon which an appeal could be founded; there being so much difficulty in showing that the works are not "necessary repair," &c.

A statement of the case has been sent to the Metropolitan Board.

PATENTS CONNECTED WITH BUILDING.*

ROOFS.—*T. Martin*, Withybush, Haverfordwest. Dated 11th April, 1860.—The patentee forms the roof covering of two layers of slate, laid evenly like flag-pavement, and between these layers he interposes a layer of good non-conducting material, and causes the same to adhere to the slates. By this means he is enabled to form a sheet of slate of any required dimensions, and of uniform thickness throughout.

IRON ROOFS AND BRIDGES.—*W. Buckwell*, East Greenwich. Dated 26th April, 1860.—The patentee avoids the use of punched bolt-holes in the tie-beam rods to secure the rods in position, and employs, in lieu of bolts or such-like fastenings, a tie or coupling of peculiar construction, which may be made compensating where great variations of temperature render the same desirable. The tie-beam rods he forms with rounded shoulders at their coupling ends, and he causes the rods to be coupled to overlap sufficiently to allow of the improved fastening being inserted between them.

APPARATUS FOR MAKING BRICKS, TILES, AND DRAIN-PIPES.—*H. Wimball*, Aldermaston, Berkshire. Dated 20th June, 1860.—This invention relates, first, to a peculiar construction and arrangement of machinery or apparatus for making bricks and other similar articles, in a continuous manner, direct from the pug-mill or otherwise, and consists in the employment of an endless chain of moulds, each mould being considerably deeper than the thickness of the brick, and provided with a pressing piston, operated upon by rollers working up inclines as the chain moves along. As each mould is filled it is conveyed beneath a stationary plate or grating, against which the clay in the mould is pressed by the gradual rising of the internal piston; and, in the case of a grating being used, the superfluous clay will pass through the grating, and may be made to re-enter the pug-mill whilst the moulds continue their course below a fixed plate, against which the clay is pressed by the continued rising of the piston. The pressed bricks so formed are forced out of the moulds by the continued outward motion of the pistons after leaving the fixed plate, and are deposited on to an endless travelling band, which conveys them away to any convenient locality. Another part of the invention consists in the application of a roller to the lower end of each of the pugging shafts of an improved pug-mill, whereby drain-pipes are more easily made, as the clay is forced or squeezed more effectively through the die. He also proposes to place the pugging shafts and pug-mills so near to each other that their respective knives will cross or intersect each other during their rotation. The stones which may be in the clay are removed by a screening grating, and are carried round by the lower blades to the two opposite sides of the pug-mill, and may be removed through doors made therein for that purpose.

MAKING BRICKS, TILES, AND OTHER ARTICLES FROM PLASTIC MATERIALS.—*T. H. Morrell*, Leyland, and *H. Charnley*, Preston, Lancashire. Dated 11th May, 1860.—In carrying out this invention, the patentees arrange a pug-mill so that the clay or other plastic material shall pass through it, and thence through one or more pairs of revolving rollers placed at suitable distances apart. The clay or other plastic material then passes into a chamber in which works a piston or push-plate (or pistons or push-plates), moving alternately from end to end of the same, being actuated by a crank or other convenient means. At each end of the chamber is a die (or dies) of the required form, and also any ordinary arrangement of apparatus for cutting off and removing the bricks or other articles as they are made.

* From the *Engineer's* lists.

Miscellanea.

ROYAL HORTICULTURAL SOCIETY.—The new gardens, South Kensington, were opened to Fellows and their friends on Thursday, and will remain so this Friday, 15th, and Saturday, the 16th. Very considerable progress has been made, of which we will speak another time.

ARTISTS' AND AMATEURS' SOCIETY.—The second *conversazione* was held at Willis's Rooms, St. James's, on Thursday, March 7th; the committee for the night being Mr. H. J. Johnson, Mr. E. Richardson, and Mr. J. H. Mole. The attendance was good, and the provision of works of art affluent.

BUCKINGHAM PALACE.—Considerable alterations and improvements are about being made, under the direction of Mr. Pennethorne, in the chapel, at Buckingham Palace, heretofore an ugly, awkward building. The roof is to be raised, maintaining certain old levels and iron columns, and a lanthorn formed in the centre.

THE GREAT INDIAN PENINSULA RAILWAY AND BHORE GHAUT INCLINE.—There are now from 40,000 to 43,000 coolies in constant employment on this line of railway, and nearly 50,000*l.* were expended in the course of the month of December last on the works, which it is expected will be completed and the Ghaut opened before the end of 1862. The engineer is Mr. Berkley, one of the Stephensons' pupils; and Messrs. Tate & West are the assistant engineers. Messrs. Adamson & Clowser are the contracting managers, who act for Mrs. Tredwell, the widow of Mr. Solomon Tredwell, the former contractor, who died while the works were in progress.

PRICE OF MODERN PICTURES.—Judging from the prices realized by the recent sale of a collection of modern pictures, buyers do not seem inclined to pay such large sums for their acquisitions as have hitherto been given. We have, for some time past, felt that there must come a reaction, that the price paid by dealers, in their desire to outbid each other, could not be maintained, and, indeed, ought not to be; for the system was unsound, insecure, and operated to the injury both of artists and the public, by putting a fictitious value upon art. The market, to speak commercially, has been forced up into an unhealthy condition, almost universally acknowledged, but against which none seemed to have the courage to make a stand. As in all similar cases, the disease appears to be at length curing itself, and every one interested in art must rejoice to see a prospect of its flourishing upon sound and just principles as between the painter and the public; the former receiving due remuneration for his labours, and the latter not compelled to pay more than the true value for what is purchased. We cannot recognize in these matters the Hudibrastic commercial axiom that

> "The value of a thing
> Is just as much as it will bring."

—*Art Journal.*

CHIMNEY-BUILDING.—I beg to submit to you a plan for building chimneys and walls which is much stronger than the common plan, hoping the favour of its insertion. By the common plan all the bricks are laid lengthwise, with a seam of mortar horizontally to cement them together. Now, it is evident that this seam is weaker than the other parts; therefore my plan is to make this seam in a zigzag, by laying the bricks upright instead of lengthwise, alternately, in short and long joinings; the bricks, however, being all of the common size and shape, excepting the lower ones; and thus the chimney cannot break without breaking a zig-zag of mortar, or breaking the bricks themselves. In domes, this plan has, I believe, been adopted.—L. GOMPERTZ.

CELLAR DWELLINGS IN MANCHESTER.—From a report presented to the Town Council from the Building and Sanitary Committee we learn that the number of habitable cellar dwellings in 1854 was 4,643, and the cellars then inhabited contained a population of 16,400, whilst the number on the 30th of September, 1860, was only reduced to 4,467, and contained a population at that time of not less than 17,478, showing a reduction of only 176 cellars, and an increase of not less than 1,078 in population. The committee rightly say,—"Such a result of six years' operation of the clauses introduced in the Act of 1853, with the avowed object of doing away as early as practicable with the occupation of cellars as separate dwellings, can hardly be deemed to be satisfactory."

HEALTH OF SCOTTISH TOWNS.—The Registrar-General reports that the deaths in the eight principal towns of Scotland in January last—2,779—greatly exceeded those of any January since the Registration Act came into operation in 1855. This is partly to be attributed to the prevalence of small-pox, scarlatina, and diphtheria, and partly to the severity of the weather. The deaths in the eight towns in 1860 (26,028) were in the high proportion of 286 in every 10,000. For every three deaths in London, there were four in the Scottish towns. In Glasgow, one half of the deaths in the year were of children under five years of age. The mortality was heaviest in Glasgow and Greenock. In Edinburgh it was 229 in the 10,000, and the Registrar-General notices the advantages that city possesses in its exposed site on sloping hills, and the consequent thorough ventilation of even its most densely-peopled low streets and closes: were its drainage, surface as well as underground, and its sanitary arrangements in the lowest class of dwellings, somewhat improved, and overcrowding prevented, he has no doubt that it would prove one of the very healthiest towns of the kingdom.

THE STATE OF OUR RAILWAY TUNNELS.—A case has been tried in the Court of Exchequer which sheds a strange light on the probable cause of the occasional fall of tunnels. The action was brought at the instance of the South Eastern Railway Company against a contractor for scamping their tunnels at Strawberry-hill and the Grove, on the line of railway between Tunbridge Wells and Robert's-bridge. Mr. Barlow was the chief engineer, and Mr. Richardson, now in Portugal, was the resident engineer. The general merits of the question may be most briefly gathered from some remarks by the judge in summing up. His lordship said that it appeared to him a very extraordinary and monstrous thing that a tunnel 286 yards in length should have been constructed with one course of cemented bricks instead of four, the loose bricks being put as a superincumbent weight upon the cement. If all the tunnels were built in the same way he should not be surprised to find that some active member of Parliament had moved to inquire into the state of the tunnels all over England. It had been said that Mr. Warden [the contractor and defendant] was no party to the fraud. It was a juggle between the underlings on both sides. It was a matter of surprise to him that the principal engineer should have visited the works but once a fortnight, and then he said that they knew of his coming, and prevented him seeing what the work really was. Knowing all this, Mr. Barlow ought to have gone to his works, as the late Duke of Wellington did to his hospitals during the Peninsular campaign,—when he was the least expected. The engineer appeared to have had a gleam of suspicion once; but, having so much to do elsewhere, he did not seem to have given himself the least trouble about the matter. The jury returned a verdict for the plaintiffs—damages 3,500*l.*, the foreman adding that the litigation might have been avoided if the company's engineer had attended to his duty.

DRAIN-PIPE SLEEPER.—Mr. Pym, of Laurence Pountney-hill, has just patented an improved railway sleeper, which he denominates the drain-pipe sleeper. It is described in the *Mechanics' Magazine* as a sleeper with a perforated metal trough under it as laid down. There is great need of some such mode of draining the permanent way.

SUPERINTENDENT ARCHITECT OF THE BOARD OF WORKS.—On Wednesday the various candidates for the vacant appointment attended before a committee of the Board to be seen. Fourteen or fifteen gentlemen presented themselves, including Mr. Kerr, Mr. Sancton Wood, Mr. G. Vulliamy, Mr. F. R. Wilson, Mr. C. Fowler, Mr. John Billing, Mr. Young, and others. The election will take place this day, Friday.

THE LOUVRE.—The gallery of Apollo, at the Louvre, which has not been devoted to any particular purpose, is receiving a collection worthy of the richness of its decorations. In glass cases, placed in three rows, are to be preserved the most beautiful objects of art selected from the private collections of the Louvre; such as antique bronzes, Nola and Etruscan vases; Egyptian, Greek, and Roman *bijoux;* also those of the Renaissance, Limoges enamels, Italian and Palissy porcelains. The Apollo gallery will thus become what the Salon Carré is for the collection of paintings—a repository of the finest specimens of art. The Museum of the Louvre has also increased its collection by two works of artistic importance. The director of the Museum has purchased a cartoon of Leonardo da Vinci, representing a female, in profile to the waist, of full size; and a *tryptich*, attributed to Memling.

LYNN REGIS WATER WORKS.—The corporation have erected new water works near their present old works, to give the town a constant supply of water. The new machinery consists of a powerful pumping-engine, of fifty-horse power, and duplicate boilers, fitted with every requisite: the machinery is so arranged that the old engines are to work from the new boilers in addition to the new engine. The buildings consist of engine-house, boiler-house, lofty chimney shaft, with a 5-feet flue; engineer's residence, boundary fencing, stand-pipe, and culverts from filter beds. The engines and boilers have been at work for the past three months, and were manufactured by the Kirkstall Forge (near Leeds) Company: the other portions of the works were carried out by Mr. Richard Freeman, of Ely. The engineer to the corporation was Mr. Stephenson.

LABOURERS' COTTAGES.—Sir L. Palk has before the House of Commons a Bill for facilitating the building of improved cottages for labourers. It proposes to enable a landowner or his trustee, guardian, &c., building or improving cottages on the estate, to charge the land with the repayment of the outlay and interest thereon, the repayment to be made in periodical sums within a period of from 10 to 30 years. The chairman of Quarter Sessions is to make a charging order to this effect; but the lands charged must be situate in the same parish as the cottages, or within a mile of them; and there is not to be in respect of any one cottage a greater charge than 140*l.*, with 4 per cent. interest. The charge is to have priority over all other charges except tithe rent-charge, quit-rents, and existing drainage or other improvement charges under Act of Parliament. The tenant for life is to pay the instalments as they become due, and the remainder-man is not to be liable for more than two years' arrears; and the tenant for life is to keep the cottages in repair and insured.

BUILDING PROGRESS IN BOSTON, U.S., IN 1860. The Bostonians appear to be erecting buildings at the rate of something like a small city every year. In 1860 they erected and remodelled

	New Buildings.	*Cost.*
In the City Proper	477	dols. 4,412,900
„ South Boston	431	1,235,000
„ East Boston	69	128,800
By the City	7	134,170
Remodeling others		21,166
Dover Street Improvement		46,125
Total	984	dols. 5,978,161

Compared with the operations of 1859, the investments in new buildings last year had been less by about 4,000,000 dollars. A large proportion of the investment of 1859 was in expensive stores in Franklin-street, and numerous high-cost houses at the South-end. The stores erected last year, though fewer in number, are equal in point of character, while enterprises already commenced promise to outshine them all. The statistics given above do not include many buildings which were commenced in 1860, and which form the basis of very extensive operations for the present year.

THE SOCIETY FOR PROMOTING AMENDMENT IN THE LAW.—We are glad to observe that this much-needed association is still actively progressing with its useful suggestions and papers. At the meeting on 25th February, two papers on the Bankruptcy and Insolvency Bill, one by Mr. Edgar, and the other by Mr. W. Hawes, were read, and both papers have been printed in the Transactions of the Society, which is now holding its eighteenth session.

HEREFORD OLD TOWN-HALL. — The Vandals have triumphed: the old Town-hall has been swept away, and the remains cleared off to various parts of the country. A correspondent says,—"Had you seen the fine remains, in a state of half demolition, when the plaster was off, and all the old woodwork remaining, I am sure the regret you expressed some time back would have been increased, more especially as there was not the slightest cause for its removal."

THE LABOUR QUESTION. — The bricklayers' strike at Warrington has begun to assume a rather serious aspect. A turn-out has just been fined 50s. and costs, or two months' imprisonment, for intimidation and assault; and others have been summoned to answer for the same misconduct.——The operative masons at Bath are still out on strike. Both masters and men have held meetings. The masters resolved to give the extra 4d. per day, but to shorten the time of labour only half an hour. The few employers who acceded to all the demands of their men have, in consequence, withdrawn their concessions, and their men have joined the turn-outs. The desire to better their condition on the part of the carpenters and joiners, and the masons—the former have gained an advance of 3s. per week—has spread to the plasterers and painters.——The nine-hours day's work has been insisted on (with reduced payment) by all operative masons in Leith, near Edinburgh, and several masters have yielded: others have discharged most of their men; and building contracts for the opening season are being seriously checked. ——At a recent public *soirée* of the Organised Trades' Association of Sheffield and the neighbourhood, a report was read, from which we take the following:—"In almost every case of dispute brought to the notice of the society, the peaceful efforts of the executive have been crowned with success. The association consists of twenty-six trades, embracing an aggregate of 4,000 members, an increase since last year of 600 members. In connection with the joiners' tool trade, a dispute of a threatening character arose. The trade itself failed to negotiate, but a deputation from the associated trades was successful. A threatened lock-out of the tailors was also averted by the executive's timely interference.

JAPANESE IMITATIVE SKILL.—Some recent instances which we gave of the alleged skill of the Japanese have excited no little attention; but surprising as they were, they are far excelled by an account, which we extract from the *New York Times*, of what those United States officials who accompanied the Japanese ambassadors in the *Niagara*, U.S. Government ship, to Yedo, happened to be uninvited and undesired witnesses, while delivering a series of presents into a Government store near Yedo. The presents had been rather scurvily housed, and the Yankees were guessing whether some of the other store-houses, which were so much superior, would not be more proper receptacles for the American presents to the Tycoon; and one of them began to move in that direction, when immediately the ambassadors, officers, and soldiers trooped around him in a body; and, in the politest and most imploring manner, beseeched him not to wet his feet unavailingly, as the keys were at Yedo, and there was nothing to be seen. Nevertheless, the officer persisted; and, after reaching a doorway, a gentle push disclosed the entrance; and lo! on either side of the shed lay seventeen of Dahlgren's 12-pounder boat howitzers, with boat carriages, and all had the appliances complete as could be,—*all evidently copied* from one presented by Commodore Perry,—and only differing in some minor improvements from those just landed outside! The looks of sheepish dismay which the Japanese assumed when this discovery was made (adds the narrator) baffles all description; but at last one of them recovered his speech; and, in reply to an inquiry, assured the officers that they had upwards of 1,000 *more of the same guns in the forts and arsenals at Yedo,—that is, about ten times the number of all the American navy,*—and were still employed in making more!! If this extraordinary story be true, it indicates something else than surprising imitative skill in the Japanese: they are evidently bent on astonishing the barbarians shortly, in quite another way.

PUBLIC PARK FOR BARNSLEY.—At the sale of the Duke of Leeds's estates at Barnsley, on Thursday week, the widow of the late Joseph Locke, esq., M.P., purchased the 17 acres called the High Style Field, for the purpose of presenting it to the town of Barnsley for a people's park. The cost of purchase was 1,890*l.*

DISTRICT TELEGRAPH CHARGES. — It is not generally known that the London District Telegraph Company now forward messages to all parts of London and the suburbs,—fifteen words for 6d., and twenty words for 9d. Addresses free, and porterage free within certain limits. Seventy stations are now open.

EXTENSION OF GAS-WORKS, DONCASTER.—The Gas Committee of this borough are about making a considerable enlargement of their works by the addition of a new tank and gasholder, capable of stowing 200,000 cubic feet of gas. The works are the property of the company; and Mr. Josiah F. Fairbank, C.E., of Scarborough, is the engineer for the additions above referred to.

ACCIDENTS TO BUILDINGS.—The large building recently erected at Portsmouth, for Cooke's circus, has been destroyed by fire, and eight valuable horses burnt to death in the stables, where the fire originated. Seven houses adjacent were also burned through, and eight partially destroyed. The total loss is estimated at upwards of 4,000*l.* ——The large warehouse of Messrs. Bamford & Co., Chapel-lane Staith, High-street, Hull, has fallen to the ground. The warehouse was built of brick and wood. The upper portion contained many hundred quarters of wheat, some considerable portion of which fell into the river and was lost. The damage will amount to several thousand pounds.

TESTIMONIAL TO THE EX-TOWN-SURVEYOR OF TYNEMOUTH.—The workmen of the corporation of Tynemouth waited upon Mr. Fenwick at his residence on Saturday, and presented him with a beautiful silver-mounted dressing-case, and an address, in which they say:—"Your official career is an example, fortunately one among many in modern times, of the exercise of authority with a practical regard to the proper feelings of the men over whom it is exercised. It shows that tyranny is not necessary to secure from workmen a proper discharge of their duties, but it has been such as to make duty a pleasure." Mr. Wilson made the presentation on behalf of the workmen, to which Mr. Fenwick replied in suitable terms.

PAPER LINEN.—The London Lace Paper Company, in the Strand, are bringing out a new invention, called paper cloth, for ladies' collars, cuffs, and similar articles. The *Critic*, in noticing it, says:—"It is extremely beautiful, and so very cheap (say 3d. a collar) as to threaten to drive crochet-work entirely out of fashion." The material, if it be like some we have seen, consists of a very slight fabric of woven stuff, felted, as it were, with linen or other fibrous shreds, such as paper is made of: it is a sort of shoddy-linen, in fact, if we may so describe it; and has all the appearance of starched linen at a very little distance: looked at closely, however, no texture like that of woven linen appears. Men's collars are sold at 6d. a dozen by a stationer in High Holborn! Each, it is said, will last a day or two, and be "reversible" even then! The washerwomen and laundresses may look out for squalls. We should not wonder to see Japanese paper handkerchiefs next in hand!

BRICKMAKING BY STEAM.—At Dunston, near Newcastle, Messrs. Dixon & Corbett are manufacturing bricks by steam. The machine is the invention of Messrs. Clayton & Co., of the Atlas Works, London. It consists of an upright cast-iron cylinder, into which the rough clay is filled from the top. Inside the cylinder are revolving angular screw blades; which, after "pugging" the clay, force it down to the bottom. Here, by a plunger or piston, it is further forced through the moulding orifices. From these it finally exudes in a continuous stream of the requisite dimensions, and is supported upon small rollers covered with moleskin until cut into slices in the form of bricks. This process is going on simultaneously at opposite sides of the cylinder, where two boys fork them on to palette boards, and convey them to the drying-house, without having touched them or flattened the edges. The principal advantages of this patent are said to consist in the revolving dies, or perpendicular rollers, between which the clay exudes from the moulding orifices; and in the clay being stationary while it is sliced; together, giving sharpness to the edges of the bricks. The machine is capable of manufacturing upwards of 1,500 bricks per hour, while 400 is the usual number formed by hand.

ELY.—The Local Board of Health have put down an additional engine to their present engine, and new boilers of twenty-horse power. They have also erected a new chimney shaft 100 feet in height, and other improvements at their pumping station. The engine and boilers were manufactured by the Kirkstall Forge Company, and the other works were carried out by Mr. Richard Freeman, of Ely. The engineer was Mr. Baldwyn Latham.

NEW GAS-METER.—A new gas-meter has been constructed by Messrs. Law & Co., of Langham Works, George-street, Great Portland-street. It is constructed upon a new principle, invented by the late Samuel Clegg, C.E., with the view of facilitating the work of the Government and gas companies' inspectors. The drum, from its peculiar construction, it is asserted, requires much less pressure than any meter now in use. It is supported at the end of a lever, which allows it to rise and fall with the water; and the same motion of the drum shuts off the gas when the water in the meter-case is too low, obviating the necessity of a separate float for that purpose.

LIGHT IN THE MUSEUM OF PRACTICAL GEOLOGY.—Sir: The lectures at the Museum of Practical Geology in Jermyn-street are for the working men, and they commence at eight o'clock in the evening, and in general terminate about nine o'clock. If there were a gas pendant placed so as to give a light over the audience, the lecture might become of practical value, as we should be able to see to write and take such notes as are useful; also, if, after the lecture, the Museum were lit up till ten o'clock, or on Tuesday, Wednesday, and Friday evenings from seven till ten, it would cease to be a theoretical museum, and become, as its title imports, a practical museum.—A CHIP.

A ST. JAMES'S HALL FOR BRISTOL.—A joint-stock limited company, with 12,000 shares of 1*l.* each as its capital, has been projected for the erection of a new Public Hall, on a central site already obtained. The mayor the high sheriff of the city, and members of Parliament, are said to have given the project their entire approval. A design has been made by Mr. H. Masters, who is the architect and surveyor to the company. The prospectus states that the main feature of the building will be a large hall, to seat 2,400 persons, or give standing room for 5,500. For smaller meetings, a smaller hall will be provided, seating about 400 persons. There will also be other rooms of still smaller dimensions, for the meetings of societies, clubs, or committees. On the basement-floor, kitchens and other rooms will be provided for public dinners or tea meetings. The great hall, it is said, has been designed with a special regard to sound, and ease and safety in ingress and egress.

SPECTRES OF SOLAR METALS: THE SUN ANALYZED!—When metals are consumed by fire, it has been discovered that each, in its vapour, manifests the presence of a special spectrum (spirit or ghost, as it were, of the departed metal), whereby the nature of the metal may with certainty be recognized: not only so, but that, although mixed with the vapours of other metals, each spectrum remains perfectly distinguishable from every other. The variously-coloured lights produced by the combustion of the metals are passed through a glass prism, and the images are received on a white screen, on which "magical mirror" appear the separate spectra, which never vary for each metal. In this way it is said to have been ascertained, by two associated German chemists at Heidelberg, not only that metallic vapours exist in the solar atmosphere, but what these actually are,—namely, iron, nickel, sodium, magnesium, and others of the earthy bases common to the globe on which we live! Should there be no unperceived source of error or illusion in this, here is the way to a wonderful revelation of mysteries! The purity or impurity of many substances, it is said, has thus been ascertained under circumstances where no other method would have been of any avail. The presence of poisons, too, may thus be tested. A new metal, or metal with a new spectrum, has already been discovered in a spring of water, and the metal has been obtained, although it took several tons of water to produce a few grains!

ABINGTON CHURCH, NORTHAMPTON.—A stained glass memorial has been placed in the east window of Abington Church. The window consists of three divisions. In the centre is the figure of our Lord, as the good Shepherd; and on the sides are Peter and Paul, with angels holding scrolls, and the Lamb, in tracery. On a brass plate underneath are the words "Glory to God," and the inscription. Messrs. Heaton & Butler, of London, were the artists.

TENDERS

For the erection of a public hall, for the Reigate Public Hall Company, Limited. Mr. John Lees, Reigate, architect. Quantities not supplied:—

Holdsworth	£3,914 10 0
Fisher & McLean	3,650 0 0
Carruthers (accepted)	3,127 0 0

For works, No. 36, Wimpole-street. Mr. Eales, architect:—

Batterbury	£919 0 0
Clark & Mannoche	810 0 0
Clemence	799 0 0
Airey & Bellingham	795 0 0
Longmire & Burge	794 0 0
Simpson	780 0 0
Morris	751 10 0
Phillips	748 0 0

For alterations and repairs at Messrs. Smith & Son's, 1, High-street, Islington. Mr. James Wagstaff, architect:—

Williams	£274 0 0
Brice	258 0 0
Hill & Son (accepted)	258 0 0

For additions to Grove-hall Lunatic Asylum, Bow, including credit for 20,000 new stock bricks and the materials of the buildings to be taken down; for Mr. E. Byas. Mr. James Tolley, architect:—

Hill	£1,313 0 0
Little	1,308 0 0
Perry	1,267 0 0
Ashby & Horner	1,238 0 0
Hedges	1,194 0 0
Ennor	1,193 0 0

For an engine-house for the parish of Christ Church, Middlesex. Mr. James Tolley, architect:—

Langmead	£310 0 0
Norman & Son	285 13 7
Pritchard & Son	264 0 0
Page	253 0 0
Tolley	247 0 0

For a new mill, engine and boiler houses, chimney, &c., to be built at Halifax, for the Halifax Cotton Manufacturing Company (Limited). Mr. John Dearden, architect. Quantities not supplied:—

For Mason's Work.

Gledhill & Turner	£3,685 0 0
Pratt	3,587 0 0

For Carpenter's and Joiner's Work.

Scott	£2,299 0 0
Kershaw & Gill	2,250 0 0
Dyson & Son	2,200 0 0
Pulman	2,200 0 0
Tuley	2,199 10 0
Lister	2,153 5 0
Naylor	2,140 0 0

For Iron founder's Work.

	Pillars, per cwt.	Troughs, per cwt.
Pearson	£0 6 0	£0 6 6
Bairstow, Brothers	0 6 3	0 6 3
Union Foundry Company	0 5 10½	0 5 10½
Berry	0 5 9	0 5 9

For Slater's and Plasterer's Work.

Webb	£343 8 5
Pickard & Lister	320 0 0
J. Taylor	318 6 4
S. Taylor	288 0 0
J. Ambler	270 0 0

For Plumber's Work.

Walsh	£148 0 0
Stafford & Co.	140 0 0
Holdsworth	140 0 0
Daniel	139 0 0
Lees	129 0 0
Horsfall	118 10 0
Firth & Son	117 0 0

For a new Church at Stapleford Abbotts, near Romford, Essex. Mr. T. Jeckell, architect:—

	Church.	Add if oak seating.	Heating Apparatus
Spaul	£1,660	£90	£51
Savill	1,564	95	38
Beevis	1,496	179	50
Dove, Brothers	1,494	105	39
Hammond (accepted)	1,444	83	42

For house, St. John's, Woking. Mr. T. Goodchild, of Guildford, architect. Quantities supplied:—

Wood	£1,724 0 0
Moon & Son	1,480 0 0
Garnett (accepted)	1,407 0 0

For completing a villa at Wimbledon. Mr. W. H. Boulnois, architect:—

Holland & Co.	£2,354 0 0
Longmire & Burge	2,285 0 0
Trollop & Sons	2,273 0 0
Macey (accepted)	2,125 0 0

For five almshouses at Brighton, for Miss Wagner; Mr. T. Simpson, architect:—

Bushby	£708 0 0
Cheesman & Co.	708 0 0
Winder	675 0 0
Fabian	672 0 0

For villa, at Stonygate, near Leicester, for Mr. Thomas Sargeant. Mr. H. J. Paull, Burnley, architect. Quantities supplied :—

Cox	£1,460	10	0
Osborne, Brothers	1,424	0	0
Coltman	1,397	10	0
Porter	1,395	0	0
Thurlby	1,381	0	0
Russell	1,379	0	0
Hutchinson & Smith	1,375	0	0
Ruskin & Son	1,375	0	0
Jarrom	1,373	0	0
Duxbury (accepted)	1,350	0	0
Sketchley	1,330	0	0

For alterations at Messrs. Cory & Son's, Commercial-road, Lambeth. Mr. J. P. Raggett, architect :—

	Stabling.	Tramway.	Total.
Nixon	£2,097	£157	£2,254
Colls	1,917	159	2,146
Timewell	1,843	143	1,986
Lawrence	1,800	142	1,942
Biar	1,693	197	1,890
Macey	1,678	148	1,826
Coleman	1,655	130	1,785
Wood	1,596	151	1,747

For the erection of a new six-story water-mill, for Messrs. Hitchcock & Clover, Bamford, by plans and specifications designed and prepared by Mr. W. P. Wilkins, engineer, Ipswich :—

Pells	£1,297	0	0
Luff	1,296	0	0
Bennett (accepted)	1,100	0	0

For Congregational Church, Staleybridge. Messrs. Poulton & Woodman, Reading, architects :—

Southeron	£2,869	0	0
Neill	2,750	0	0
Terras	2,692	0	0
Clarke & Jones (accepted)	2,488	0	0

The above amounts are in addition to the materials of the old chapel.

For alterations and additions to St. Mary's Church, Haggerstone. Mr. Jas. Brooks, architect :—

Earp	£2,630	0	0
Axford & Co.	2,438	0	0
Turner & Sons	2,395	0	0
Henshaw	2,350	0	0
Perry	2,294	0	0
Raby	2,217	0	0

TO CORRESPONDENTS.

J. S. B. (without a tracing we cannot judge).—J. G.—H. de M.—A. F. (we could not advise such a course).—J. H. H.—Bray's Traction Engine (shall have attention).—* * (received).—J. P.—L. G.—J. N.—J. P. S.—T. W. (we cannot give an opinion on *ex parte* evidence).—S. G. B. (there is a good chapter on the subject of timber in Gwilt's "Encyclopædia of Architecture," book ii. ch. ii.).—J. W. B.—L. B. (drawings sent to York-street will be safely returned if not used).—I. M. M.—J. P. S.—T. & Co.—F. W. S.—S. & B.—F. T.—G. W. (the statement is as we have given it).—Competitor.

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

☞ ***NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."***

ADVERTISEMENTS.

TO TIMBER MERCHANTS, BUILDERS, AND OTHERS.

MESSRS. LEREW & LEREW will SELL by AUCTION, on the PREMISES, RAILWAY ARCHES, Camden-town, near the Station, on MONDAY, MARCH 25th, at TWELVE, about—

1,650 Yellow, White, and Pine Planks, Deals and Battens.
800 Cut ditto, in various thicknesses.
185 Squares of 1¼ in. 1 in. ¾ in. and ½ in. Prepared Yellow and White Flooring.
6,000 Feet Wide Pine Board.
9,000 Feet Quartering.
16 Squares Match Boards.
20 Squares Feather-edge ditto.
1,000 Feet American Birch.
50 Dozen Slating Battens.
30 Dozen Pantile Laths.
5,000 Feet Mouldings.
20 Doors.
Scaffold Poles, &c.

Auction Offices, 2, Cardington-street, Hampstead-road, N.W.

CLAPHAM, Surrey.—To Builders, Fixture-dealers, and Others.

MR. JAMES STEVENS will SELL by AUCTION, upon the PREMISES, on WEDNESDAY, 20th MARCH, 1861, the interior FITTINGS of ST. LUKE'S CHURCH, Old Town, Clapham : comprising 4,150 feet super. of oak partitions, doors and seats of 60 pews, capital oak pulpit, reading-desk and staircase, 650 feet super. of painted deal, panelled sides, doors and seats of 30 pews in lower gallery ; the erection and fitting-up of two upper side galleries, with forms, seats, banister front, and 6 iron columns ; a superior church organ, with twelve stops, keys, &c. in imitation wainscot case (by Bevington & Son, Greek-street, Soho), and other fittings.—May be viewed on application to the Auctioneer, and catalogues may be had at his Offices, Clapham-common, S. ; and Harriet-street, Lowndes-square, S.W.

QUEENBOROUGH AND KINGSFERRY, ISLE OF SHEPPY.—Important Sale.—To Contractors and Others.—TO BE SOLD by AUCTION, by

H. STIDOLPH, on TUESDAY, MARCH 19, 1861, a large quantity of RAILWAY METALS, usual length ; CHAIRS, SLEEPERS, &c. ; near the JETTY, at Queenborough, and by the side of the Railway at KING'S FERRY. By virtue of Process from the Crown. Sale to commence at Queenborough at TWELVE o'clock precisely, and at King's Ferry immediately after.—The goods may be viewed on the morning of sale, and catalogues to be had of the Auctioneer, at Faversham.

TO BUILDERS, UPHOLSTERERS, FRAMEMAKERS, ARTISTS, AND OTHERS.

MR. CHARLES J. BAKER (late Finnis), has received instructions from Mr. C. F. Bielefeld, who has removed to his new Premises, to SELL by AUCTION, on the PREMISES, No. 18, Wellington-street, Strand, on TUESDAY, MARCH 19, at ELEVEN for TWELVE, the SURPLUS STOCK of PAPIER MACHÉ ORNAMENTS, including about 200 picture and glass frames and cornices, in gilt, oak, and in the white, centre flowers, coats of arms, caps, chandelier, and several thousand feet of enriched and other mouldings.—May be viewed the day prior.—Auction Offices, 63, Great Russell-street, Bloomsbury.

TO TIMBER MERCHANTS, BUILDERS, CABINET, PIANOFORTE, BLIND-MAKERS, and Others.

THOMAS ROBERTS & CO. will SELL by AUCTION, on TUESDAY, 26th MARCH, 1861, at ELEVEN o'clock precisely, on the PREMISES, Champion-yard, No. 155, Kingsland-road, Shoreditch, the extensive and well-seasoned STOCK, consisting of Spanish and Honduras Mahogany, in logs, planks, and boards (comprising some very figurry veneer fitches), Birch, Ash, Maple, and Walnut planks, Mahogany, Rosewood, and other Veneers, about 1,000 Pine, Spruce, and Yellow Deals, &c. 50,000 feet Venetian-blind Laths, Spruce Palings, &c. and a variety of other goods.—Catalogues may be had at the Place of Sale, and of the Auctioneers, 9, Billiter-street, E.C.

TO CARPENTERS, BUILDERS, AND OTHERS.—Absolute Sale of the entire Stock of a Black and General Ironmonger, on THURSDAY next, by order of the Trustees.

MR. WM. HOLLINGSWORTH is instructed to SELL by AUCTION, at the SALE-ROOMS, 13, High Holborn, next THURSDAY, at TWELVE o'clock, BUILDERS' and GENERAL IRONMONGERY, of every description, stoves and ranges, guttering, piping, and other effects, used in the building trades.—Catalogues and view day before the sale.

CHURCH ORGANS.—BRYCESON'S ORGAN FACTORY, BROOK STREET, EUSTON ROAD, LONDON, N.W. Established 1796. Apply for PRICED CATALOGUE of St. Cecilia, Scudamore, and other Organs, usually in Stock. Also as to the Tuning, &c. of Organs in all parts of the country. Church Organs of any size built, enlarged, or revoiced, as well as removed and WAREHOUSED DURING RESTORATIONS.
PRIZE MEDAL, 1851.

MR. WILLIAM ELLISON, ARCHITECT and CONSULTING SURVEYOR, 13, PENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C. (formerly of Stainsby-road) continues to advise BUILDERS On BREACHES of CONTRACT, DISPUTED ACCOUNTS, &c.

THE ARTS AGENCY OFFICE, No. 2, GREAT JAMES STREET, Bedford-row, London, W.C.—Architects, Surveyors, Engineers, Builders, Lithographers, &c. supplied with, and Engagements secured for, Draughtsmen and Clerks of Works. Drawing, Colouring, and Surveying by first-class Artists. A Prospectus obtained by sending a stamped directed envelope.
R. J. COLES, Agent.

TO INVENTORS.—THE GENERAL PATENT COMPANY (LIMITED), 71, Fleet-street, London, E.C. undertakes to obtain PATENTS for INVENTIONS and REGISTRATIONS for DESIGNS at most moderate charges. Unusual facilities afforded to Inventors. Printed information gratis on application to ROBERT M. LATHAM, Secretary.

ARCHITECTURAL PARTNERSHIP.—An Architect of considerable experience and moderate capital is seeking a PARTNERSHIP with a gentleman having an established business ; or he would take the management of a business, and make a liberal arrangement for the present proprietor's gradual retirement. —For particulars, apply to Mr. G. A. CAPE, Accountant, 3, Adelaide-place, London-bridge.

PARTNERSHIP.—To Architects.—A Gentleman of great experience, and competent to the Management of an office, desires to treat for a share in an established practice or to take the whole of one from a party wishing to retire, either gradually, or at once.—Address to ALPHA, 23, Philpot-lane, E.C.

GENTLEMEN calling upon Builders, Timber-Merchants, Carpenters, and Cabinet-makers, may meet with a lucrative AGENCY for the sale of Patent and other Machinery for Working in Wood, by applying to M. N. B. Office of "The Builder."

TO PARENTS AND GUARDIANS.

THERE is a VACANCY for an APPRENTICE to the MARBLE TRADE, for a strong, active Youth, not more than 15 years of age. A small Premium required.—Apply at the Westminster Marble Works, Earl-street, Westminster, S.W. between ONE and TWO ; or, by letter, to Mr. PILTON.

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WANTED, a first-rate SLATE-MASON, who understands preparing work for enamelling, fixing chimney-pieces, cisterns, &c. Also a RUBBER who could turn his hand to polishing, if needful.—Apply to Mr. THOMAS FRY, Slate Works, Pudsey-street, Liverpool.

TO BRICK AND TILE MAKERS.

WANTED, thirty miles from London, a steady Man, who understands making and burning bricks, both in kiln and clamp, and who also understands the making and burning of drain-pipes and tiles.—Apply on FRIDAY next, at Mr. W. WELLS'S Office, Coleman-street, Camberwell, S. between the hours of FOUR and SIX o'clock p.m.

WANTED, for a CONSTANCY, by a JOBBING BUILDER, a YOUTH, to assist in the OFFICE.—For address, apply at Welbank's Newspaper Office, Sloane-square, Chelsea.

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